

**Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:
A. Project Information Form**

1. Applying for (select one): ☒ (a) Prop 13 Urban Water Conservation Capital Outlay Grant
☐ (b) Prop 13 Agricultural Water Conservation Capital Outlay Feasibility Study Grant
☐ (c) DWR Water Use Efficiency Project
2. Principal applicant (Organization or affiliation): Placer County Water Agency
3. Project Title: Auburn System Leak Repair
4. Person authorized to sign and submit proposal:
- | | |
|-----------------|----------------------------------|
| Name, title | David Breninger |
| Mailing address | P. O. Box 6570, Auburn, CA 95604 |
| Telephone | 530-823-4864 |
| Fax. | 530-823-4884 |
| E-mail | DBreninger@pcwa.net |
5. Contact person (if different):
- | | |
|------------------|--|
| Name, title. | Mike Nichol |
| Mailing address. | P. O. Box 6570, Auburn, California 95604 |
| Telephone | 530-823-4864 |
| Fax. | 530-823-4884 |
| E-mail | MNichol@pcwa.net |
6. Funds requested (dollar amount): 679,560
7. Applicant funds pledged (dollar amount): 284,000
8. Total project costs (dollar amount): 963,560
9. Estimated total quantifiable project benefits (dollar amount): 1,802,778
- Percentage of benefit to be accrued by applicant: 100
- Percentage of benefit to be accrued by CALFED or others: 100 (see text, Section D-4)

**Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:
A. Project Information Form (continued)**

10. Estimated annual amount of water to be saved (acre-feet): 770 ac-ft
- Estimated total amount of water to be saved (acre-feet): 38,505 ac-ft (life of project)
Over 20 years 15,946 ac-ft (20 years of project)
- Estimated benefits to be realized in terms of water quality, instream flow, other: Dry year increase, instream flows,
11. Duration of project (month/year to month/year): October/2002 to March/2005
12. State Assembly District where the project is to be conducted: 4
13. State Senate District where the project is to be conducted: 1
14. Congressional district(s) where the project is to be conducted: 4
15. County where the project is to be conducted: Placer County
16. Date most recent Urban Water Management Plan submitted to the Department of Water Resources: December 2000
17. Type of applicant (select one):
Prop 13 Urban Grants and Prop 13 Agricultural Feasibility Study Grants:
- ☐ (a) city
☐ (b) county
☐ (c) city and county
☐ (d) joint power authority
☒ (e) other political subdivision of the State, including public water district
☐ (f) incorporated mutual water company
- DWR WUE Projects: the above entities (a) through (f) or:
- ☐ (g) investor-owned utility
☐ (h) non-profit organization
☐ (i) tribe
☐ (j) university
☐ (k) state agency
☐ (l) federal agency
18. Project focus:
- ☐ (a) agricultural
☒ (b) urban

**Consolidated Water Use Efficiency 2002 PSP
Proposal Part One:
A. Project Information Form (continued)**

19. Project type (select one):
Prop 13 Urban Grant or Prop 13
Agricultural Feasibility Study Grant
capital outlay project related to:

- ☒ (a) implementation of Urban Best Management Practices
- ☐ (b) implementation of Agricultural Efficient Water Management Practices
- ☐ (c) implementation of Quantifiable Objectives (include QO number(s))
-
- ☐ (d) other (specify)
-

DWR WUE Project related to:

- ☐ (e) implementation of Urban Best Management Practices
- ☐ (f) implementation of Agricultural Efficient Water Management Practices
- ☐ (g) implementation of Quantifiable Objectives (include QO number(s))
- ☐ (h) innovative projects (initial investigation of new technologies, methodologies, approaches, or institutional frameworks)
- ☐ (i) research or pilot projects
- ☐ (j) education or public information programs
- ☐ (k) other (specify)
-

20. Do the actions in this proposal involve physical changes in land use, or potential future changes in land use?

- ☐ (a) yes
- ☒ (b) no

If yes, the applicant must complete the CALFED PSP Land Use Checklist found at http://calfed.water.ca.gov/environmental_docs.html and submit it with the proposal.

**Consolidated Water Use Efficiency 2002 PSP
Proposal Part One
B. Signature Page**

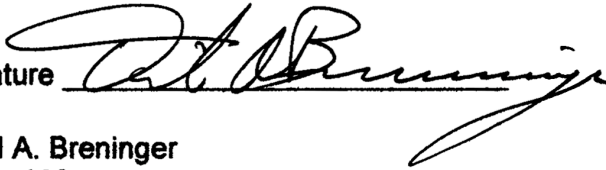
By signing below, the official declares the following:

The truthfulness of all representations in the proposal;

The individual signing the form is authorized to submit the proposal on behalf of the applicant; and

The individual signing the form read and understood the conflict of interest and confidentiality section and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant.

Signature



Date

Feb 20 2002

David A. Breninger
General Manager
Placer County Water Agency

PROPOSAL PART ONE

This section includes a brief project summary and discusses the relevance, importance, technical/scientific merit, feasibility, monitoring and assessment, qualifications, and benefits and costs of the proposed project.

PROJECT SUMMARY

The proposed project consists of repairing leaks within the oldest parts of the water system that serves the City of Auburn, Placer County, California. The project consists of conducting leak repairs by conducting main replacement of five (5) sections within the Auburn-Bowman Domestic System of the Placer County Water Agency (PCWA). The Auburn-Bowman Domestic System is within Zone 1, one of five (5) retail zones of PCWA. The Auburn-Bowman Domestic System encompasses nearly 20 percent of PCWA's total Zone 1 connections, or approximately 5,423 connections.

The Auburn-Bowman Domestic System receives its water from PG&E's Wise/South Canal and PCWA's Boardman Canal. This water is used to supply PCWA's Bowman and Auburn Water Treatment Plants as well as raw water customers. These two water treatment plants provide treated water service to the communities of Bowman, Auburn, and Newcastle. Figure 1 depicts the location of the five zones served by PCWA. Figure 2 depicts the locations of the key Auburn-Bowman Domestic System water supply facilities. Figure 3 depicts the locations of the pipe main replacements.

The efficient use of California's limited water supplies is a critical local, regional, and statewide water issue. Portions of the Auburn-Bowman System have a leak history spanning many years and contributes disproportionately to Zone 1's unaccounted-for water. The goal of this project is to immediately repair aged water main pipe sections that are known to have significant leaks. In fact, one section (the Fulweiler Avenue) that has a history of at least nine leaks is planned for repair during 2002.

The project cost is \$963,560. This grant application is for \$679,560. It is expected that 3 percent of the Zone 1 unaccounted-for water (UAW) use will be conserved through these repairs resulting in an average water savings of approximately 770 ac-ft/year, or 38,505 ac-ft over a 50-year period.

A. SCOPE OF WORK: RELEVANCE AND IMPORTANCE

This section describes the nature, scope, and objectives of the project. It also includes a statement of critical local, regional, Bay-Delta, State and federal water issues and a description of how this project is consistent with local and regional water management plans and other resource management plans.

Figure 1. Location Map

Figure 2. Facility Location Map

Figure 3. Pipe Main Replacement Locations

A.1 Nature, Scope, and Objectives of the Project

The nature of this project is to replace leaking water mains. The objectives of this project are to significantly increase water use efficiency by reducing the amount of UAW through leaks. Leaking water mains contribute significantly to UAW. Unaccounted-for water is unmetered water use such as for fire protection and training, system and street flushing, sewer cleaning, construction, system leaks, water use at the treatment plants, and unauthorized connections. Unaccounted-for water can also result from meter inaccuracies. PCWA has two types of unaccounted-for water. The first type is the unaccounted-for water occurring in the raw water transmission system between the water source and the delivery points to the municipal water treatment plants and raw water customers. The second type is the unaccounted-for water occurring in the treated water system between the surface water treatment plants and the retail customers. This project targets the second type of unaccounted-for water. Currently, PCWA's Zone 1 experiences approximately 18 percent of its annual water production as unaccounted-for water (Brown and Caldwell, December 2000). However, because the Auburn-Bowman system includes all of the oldest parts of Auburn and its aged infrastructure, PCWA estimates the UAW within the Auburn-Bowman system is disproportional higher and could be as high as 25 percent.

There are five (5) major sections of Auburn-Bowman Domestic System that are targeted for immediate repair. Each section has a history of significant leaks. All five sections are located within the older parts of the City of Auburn: The five sections are: (1) a portion of Placer Street, (2) a portion of Donnington Avenue, (3) a portion of Placerado Avenue, (4) a portion of Pleasant Avenue, and (5) a portion of Fulweiler Avenue. The Fulweiler Avenue project is currently in the environmental process. It is anticipated that all five pipe main replacement projects will be completed over the next three years.

A.2 Statement of Issues, Project Need, and Project Consistency

The efficient use of California's limited water supplies is a critical local, regional, and statewide water issue. PCWA utilizes surface water from the Yuba River, American River, and the Bear River as part of its water supply. The purpose of this project is to significantly increase water use efficiency by reducing the amount of unaccounted-for water. This project will provide benefit to the Bay-Delta by ensuring that water diverted upstream is used efficiently.

PCWA is a stakeholder in three major water management teams: Sacramento Area Water Forum (Water Forum), the American River Basin Cooperating Agencies (ARBCA), and the Regional Water Authority (RWA). The project is consistent with the local water management plans including the SGA. This project is consistent with regional water management plans such as the ARBCA Regional Water Master Plan (RWMP) and Water Forum Agreement. This project is also consistent with statewide water management plans such as the California Urban Water Conservation Council's Memorandum of Understanding regarding Urban Water Conservation in California.

PCWA is a member of the Water Forum. In the year 2000, the Water Forum finalized the *Water Forum Agreement* (Agreement) which contains seven major elements to meet its objectives. Water conservation is the fifth major element in the Agreement. The water conservation portion of the Agreement describes each water purveyor's commitments to implement BMPs. These BMPs were derived from the original MOU developed by the CUWCC, and then customized for the Water

Forum conservation agreements prepared for the individual purveyors. This project does not include implementing work effort considered a part of the requirements of the Water Forum Agreement.

This project involves the implementation of urban water conservation best management practice (BMP) number 3, *System Water Audits, Leak Detection and Repair*, as defined by the California Urban Water Conservation Council (CUWCC). The unpredictable water supply and ever increasing demand on California's complex water resources have resulted in a coordinated effort by the California Department of Water Resources (DWR), water utilities, environmental organizations, and other interested groups to develop a list of urban BMPs for conserving water. This consensus-building effort resulted in the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU), which formalizes an agreement to implement these BMPs and makes a cooperative effort to reduce the consumption of California's water resources.

This project is compatible with PCWA's 2000 UWMP (Brown and Caldwell, Urban Water Management Plan, 2000) and PCWA's ongoing efforts to achieve greater water use efficiency. PCWA's Board of Directors recognizes the importance of water management and conservation programs. PCWA's adopted rules and regulations include the general policy of the water system that states in part that the PCWA will operate and maintain the water system in an efficient and economical manner and distribute and supply water as fairly and equitably as possible.

In August 1999, PCWA requested assistance from DWR's Water Use Efficiency Office to assess water efficiency opportunities in Zone 1. The February 2000 DWR study recommended that PCWA give attention to the 16 percent UAW in Zone 1. PCWA's 2000 UWMP identified an 18.1% UAW in Zone 1. PCWA estimates that the UAW percentage within the Auburn-Bowman System is significantly higher proportionate to the remainder of Zone 1 due to the age of the system. The project proposed for funding with this application is an integral step in implementing this recommendation.

B. SCOPE OF WORK: TECHNICAL/SCIENTIFIC MERIT, FEASIBILITY, MONITORING AND ASSESSMENT

This section describes the methods, procedures and facilities associated with the project. A task list and schedule and quarterly expenditure of the project are also included in this section.

B.1 Methods, Procedures, and Facilities

The PCWA will use standard engineering and construction methods to implement this project. Standard purchasing and contracting procedures will be used to purchase pipe in bulk and use a general contractor for construction and paving as defined in the project specifications in Appendix A. PCWA will use in-house staff to prepare construction documents and conduct construction inspection. Construction activities will be put out to bid. This project does not require the purchase of land or easements. All planning, design, and engineering is being performed in-house. Where required, PCWA will acquire encroachment permits.

For each project, PCWA assigns an engineer to serve as a project engineer/manager. The project manager is responsible for the overall conduct of the project. This includes assuring that an

environmental document is prepared and appropriate land, easements and right-of-way are obtained. The project manager is also responsible for the design and preparation of plans and specifications, bidding, construction management, and assuring construction inspection and testing are performed.

Each project will be inspected by either PCWA staff inspectors or PCWA consulting inspectors. PCWA will provide full time inspection on each project. The City of Auburn Department of Public Works will inspect the road rehabilitation portion of the project. Soils testing will be required and will be performed by a consulting geotechnical engineering firm employed by PCWA. Pressure testing will be performed on the pipeline. The pressure tests will be conducted and monitored by the PCWA inspector.

B.2 Task List and Schedule

The tasks for implementation of this project and the project schedule are described below and presented on Figure 4. The schedule includes deliverable items, due dates, and projected costs for each task. Table B-1 presents a quarterly expenditure projection.

Tasks

1. Develop action plan.
2. Prepare contract documents for construction services, competitive bid selection.
3. Prepare environmental documentation.
4. Construct main replacements.
5. Prepare Interim Progress Report with summary of repairs to date.
6. Prepare Monitoring and Assessment Report. This report will be written following the end of the project. It will include results of pipe replacements, leak repairs, and the resulting water use and water savings.

Figure 4. Project Timeline

Tasks	Costs	2002	2003	2004	2005
		O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D
1. Develop Action Plan	\$3,000	▶			
2. Contract Documents and Competitive Bid	\$3,000	▶			
3. Environmental Documentation	\$5,000	▶	▶	▶	
4. Pipe Replacement Projects	\$943,560				
5. Interim Progress Reports	\$4,000			▶	
6. Prepare Project Report	\$5,000				▶

◆ Deliverable items

Table B-1. Quarterly Expenditure Projection

Quarter	Months	Expenditure
<u>2002</u>		
4	October-December	7,060
<u>2003</u>		
1	January-March	85,778
2	April-June	85,778
3	July-September	89,250
4	October-December	85,778
<u>2004</u>		
1	January-March	85,778
2	April-June	85,778
3	July-September	90,250
4	October-December	85,778
<u>2005</u>		
1	January-March	85,778
2	April-June	85,778
3	July-September	85,776
4	October-December	5,000
Total		\$963,560

B.3 Monitoring and Assessment

A list of project-specific performance measures that will be used to assess project success in relation to its goals is as follows:

- The project performance will be measured by the actual amount of water saved as a result of stopping existing leaks in the distribution system. During construction, the leaks will be exposed and the flow rate of each leak will be measured. The results of these measurements will be documented in the Interim Progress Report and the Monitoring Assessment Report as described below.
- One Interim Progress Report will be prepared. This report will be a status report summarizing leak repairs conducted to date. This interim report will be used to document the progress of the project and determine if the project is on schedule and aid in project control. The progress report will be prepared approximately halfway through the project (June, 2004).
- A Monitoring and Assessment Report will be prepared following project completion. This report will monitor and assess the before and after water use in the Auburn-Bowman Domestic System. The report will also summarize all leak repairs.

The Interim Progress Report and the Monitoring and Assessment Report will be made available to the public at the PCWA office and through various outreach methods.

B.4 Preliminary Plans and Specifications and Certification Statements

Preliminary plans and specifications are provided in Appendix A.

C. QUALIFICATIONS OF THE APPLICANTS AND COOPERATORS

The qualifications of the project manager, cooperators, and partners to be involved in the real-time flow monitoring program for Placer County Water Agency (PCWA) are discussed in this section. A description of PCWA is also included.

C.1 Resumes

The project manager responsible for the water system audit, leak detection and leak repair program will be Mike Nichol, the Senior Director of Field Operations. Mr. Nichol's resume is included in Appendix B. Mr. Nichol has 13 years of experience associated with the PCWA water distribution system.

C.2 External Cooperators

No external cooperators will be utilized for the PCWA water system audit, leak detection and leak repair program.

D. BENEFITS AND COSTS

This section includes a breakdown and justification of the project budget and cost sharing information. Also described and analyzed are the benefits and costs of this project.

D.1 Budget Breakdown and Justification

Table D-1 presents a detailed estimated budget that includes relevant line items for capital outlay project proposals and justification of each line item. This table also indicates the amount of cost sharing for each element. Individual spreadsheets for each portion of the project are included in Appendix D.

Table D-1. Detailed Budget – Capital Outlay Project Proposal

Item	Justification	Labor		Other direct costs, dollars	Total, dollars	PCWA portion	Prop 13 portion
		Hours	Dollars				
Land Purchase/Easement	N / A	0	0	0	0		
Planning/Design/Engineering	Environmental Doc., In-house design and bid	533	31,900	102,500	134,400	0	134,400
Materials/Installation	Publicly bid construction contract	0	0	568,000	568,000	284,000	284,000
Structures	N / A	0	0	0	0	0	0
Equipment Purchases/Rentals	N / A	0	0	0	0	0	0
Environmental Mitigation/Enhancement	N / A	0	0	0	0	0	0
Construction/Administration/Overhead	Project Management, Inspection, Geotechnical, Clerical, Mapping	2,541	206,660	35,000	241,660	0	241,660
Project/Legal/License Fees	Legal and Encroachment Permit fees	0	0	19,500	19,500	0	19,500
Contingency (15%)					0	0	0
Other					0		
Project Total (dollars)					963,560	284,000	679,560
N / A=not applicable							

D.2 Cost Sharing

PCWA is requesting **70.5 percent** of the project or **\$679,560** in funding from the Proposition 13 Urban Water Conservation Program. PCWA will commit **\$284,000** or a cost fund **50 percent** of the total construction costs.

There are no additional funding commitments or cost sharing agreements for this project.

D.3 Benefit Summary and Breakdown

There are multiple expected beneficial outcomes of this project and physical changes that will occur as a result. The value of those outcomes and physical changes are both quantifiable and non-quantifiable. The quantifiable values of physical changes that will occur as a result of this project and the beneficiary of each benefit are listed in Table D-2. Project outcomes and benefits will be shared among the project's beneficiaries and will directly and indirectly contribute to CALFED goals.

Table D-2. Quantifiable Physical Changes, Expected Benefits, and Beneficiaries

Physical change	Expected benefit	Beneficiary
Reduce unaccounted-for water	770 ac-ft/year	CALFED goal-upstream water in PCWA used more efficiently PCWA can "stretch" their surface water entitlements from the Yuba, Bear, and American Rivers
PCWA will save money on avoided costs of a new water supply (\$160/ac-ft)	\$1,802,778 ^a	PCWA/customer

^aDiscounted savings

Non-quantifiable project benefits are listed and described in Table D-3. It is indicated how each non-quantified benefit will be shared among the project beneficiaries. The non-quantified outcomes expected to directly or indirectly contribute to CALFED goals are also identified and delineated.

Table D-3. Non-quantifiable Benefits

Physical change	Expected benefit	Beneficiary
Decreased unaccounted-for water within the service area	<ul style="list-style-type: none">Improve aquatic and terrestrial habitat in South Yuba RiverProvides increased water supply reliability to water users while at the same time assuring the availability of sufficient water to meet fishery protection and restoration recovery needs.This project will allow PCWA to delay the date of need to use their full water right entitlements.	CALFED goal/ PCWA/ Customer
Less water pumped into the system	Energy savings	Energy provider/PCWA

D-4. Assessments of Costs and Benefits

This section includes an assessment that summarizes the costs and benefits of the proposed project. The major analysis assumptions are listed and explained. This section also shows the present value of the quantified costs and benefits to the applicant, CALFED, and other parties affected by the project and summarizes non-quantified costs and benefits to the applicant, CALFED, and other parties affected by the project.

This project is locally cost effective. Table D-4 summarizes the water use assumptions. The economic analyses assumptions are described below and summarized in Table D-5. Based on the benefit-cost ratio assessment in Table D-6, using total project benefits and costs including total project costs (grant amount and agency share), the project has a **benefit to cost ratio of 2.1**. Since this number is greater than one, it indicates an economically justifiable project.

1. The value of conserved water for PCWA is \$160/ac-ft. This is the marginal cost of water, which includes the amortized capital cost for expansion of water treatment plants, pipeline, and annual operations, maintenance costs, and pumping costs.
2. All quantified benefits and costs are expressed in year 2001 dollars using a 6 percent discount rate as required in part D.4.b and D.4.c of the Consolidated Water Use Efficiency 2002 Proposal Solicitation Package.
3. The Auburn-Bowman system uses 5,120 ac-ft/yr, which is approximately 20 percent of the total Zone 1 water production. Zone 1 has an unaccounted-for water use of 18 percent of total production per year. Because the Auburn-Bowman system includes all of the oldest parts of Auburn with its aged water distribution system, the unaccounted-for water within the Auburn-Bowman system is estimated to be as high as 25 percent of the water used in that part of the system. Therefore, 5 percent of the Zone 1 water production is assumed to be lost in the Auburn Bowman portion of Zone 1. A summary of the Zone 1 and Auburn-Bowman water production, unaccounted-for water usage, and project water savings is provided in Table D-4.
4. The water savings that would result from for this project is estimated to be approximately **770 ac-ft/year (427 gpm)**. The amount of water lost from leaks in the project area is not precisely known. However, reasonable estimates of water loss can be made based on system knowledge, historical information, and use of leak loss tables in the *BMP Costs and Savings Study* (California Urban Water Conservation Council (CUWCC), 2000).

PCWA has identified 51 existing leaks in the Auburn-Bowman system pipelines proposed for replacement by this project. It is estimated that there will be an annual savings of 15.1 ac-ft per leak (9.2 gpm). This savings estimate per leak is conservatively low compared to the leak loss calculation data in Table 2, Leak Losses for Circular Holes Under Differential Pressure, in the *BMP Costs and Savings Study*, which shows leak losses for a 0.5 inch diameter hole at 59.7 gpm at 100 psi. This project's savings estimate per leak compares to leak loss data in Table 3, Leak Losses for Joints and Crack Under Differential Pressure, in the *BMP Costs and Savings Study*, which shows leak losses for a 1.0 inch by 0.06 inch crack at 14.2 gpm at 100 psi (California Urban Water Conservation Council (CUWCC), 2000).

5. This project includes a total of 51 leak repairs (PCWA personal communication, February 20, 2002) (9 leaks repaired in 2002, 18 leaks repaired in 2003, and 24 leaks repaired in 2004).
6. The total cost for this project is \$963,560. (\$170,040 will be spent in 2002, \$340,080 will be spent in 2003, and will be spent \$453,440 in 2004)
7. The life span of the main replacement is 50 years. This is the life of the main based on information provided by Placer County Water Agency.

Table D-4. Summary of Zone 1 and Auburn-Bowman Water Usage

Water usage	ac-ft/yr
Zone 1 water production	25,590
Auburn-Bowman system	5,120
Zone 1 unaccounted-for water	4,606
Auburn-Bowman unaccounted-for water	1,280
Expected water savings (this project)	770

The present values of the quantified costs and benefits for the applicant, each project beneficiary, and CALFED are quantified in Table D-7. The project will benefit the applicant through direct reduction of water needed to supply existing customers. CALFED will benefit through less diversion of surface water flows from surface water supplies upstream of the Bay-Delta. It is assumed in Table D-7 that the value of this surface water to CALFED is equivalent to the \$160 per acre-feet (AF) marginal cost. A summary of the non-quantified costs and benefits to the applicant, each project beneficiary, and CALFED are summarized in Table D-8.

Table D-5. Economic Analysis Assumptions

Assumption		
No.	Assumption	
(1)	Value of conserved water (\$/AF) =	160
(2)	Discount rate (real) =	6.00%
(3)	Annual water savings (AF/leak repair) =	15.1
(5)	Dollars spent in 2002 =	\$170,040
(5)	Dollars spent in 2003 =	\$340,080
(5)	Dollars spent in 2004 =	\$453,440
(4)	No. of leaks repaired in 2002 =	9
(4)	No. of leaks repaired in 2003 =	18
(4)	No. of leaks repaired in 2004 =	24

Table D-6. Economic Analysis

Calendar Year	No. of Leaks Repaired	Incremental Water Savings (AF/yr)	Annual Water Savings (AF/yr)	Benefits (\$)		Costs (\$)	
				Undiscounted Benefits (avoided variable costs)	Total Discounted Benefits	Undiscounted Capital Costs	Total Discounted Costs
Assumption	(4)	(3), (4)	(3), (4)	(1),(3),(4)	(2)	(5)	(2)
2002	9	136	136	21,744	20,513	170,040	160,415
2003	18	272	408	65,232	58,056	340,080	302,670
2004	24	362	770	123,216	103,455	453,440	380,717
2005		0	770	123,216	97,599	0	0
2006		0	770	123,216	92,074	0	0
2007		0	770	123,216	86,862	0	0
2008		0	770	123,216	81,946	0	0
2009		0	770	123,216	77,307	0	0
2010		0	770	123,216	72,931	0	0
2011		0	770	123,216	68,803	0	0
2012		0	770	123,216	64,909	0	0
2013		0	770	123,216	61,235	0	0
2014		0	770	123,216	57,768	0	0
2015		0	770	123,216	54,499	0	0
2016		0	770	123,216	51,414	0	0
2017		0	770	123,216	48,504	0	0
2018		0	770	123,216	45,758	0	0
2019		0	770	123,216	43,168	0	0
2020		0	770	123,216	40,724	0	0
2021		0	770	123,216	38,419	0	0
2022		0	770	123,216	36,245	0	0
2023		0	770	123,216	34,193	0	0
2024		0	770	123,216	32,258	0	0
2025		0	770	123,216	30,432	0	0
2026		0	770	123,216	28,709	0	0
2027		0	770	123,216	27,084	0	0
2028		0	770	123,216	25,551	0	0
2029		0	770	123,216	24,105	0	0
2030		0	770	123,216	22,740	0	0
2031		0	770	123,216	21,453	0	0
2032		0	770	123,216	20,239	0	0
2033		0	770	123,216	19,093	0	0
2034		0	770	123,216	18,012	0	0
2035		0	770	123,216	16,993	0	0
2036		0	770	123,216	16,031	0	0
2037		0	770	123,216	15,124	0	0
2038		0	770	123,216	14,268	0	0
2039		0	770	123,216	13,460	0	0
2040		0	770	123,216	12,698	0	0
2041		0	770	123,216	11,979	0	0
2042		0	770	123,216	11,301	0	0
2043		0	770	123,216	10,662	0	0
2044		0	770	123,216	10,058	0	0
2045		0	770	123,216	9,489	0	0
2046		0	770	123,216	8,952	0	0
2047		0	770	123,216	8,445	0	0
2048		0	770	123,216	7,967	0	0
2049		0	770	123,216	7,516	0	0
2050		0	770	123,216	7,091	0	0
2051		0	770	123,216	6,689	0	0
2052		0	634	101,472	5,197	0	0
2053		0	362	57,984	2,802	0	0
Totals:	51	770	38,505	6,160,800	1,802,778	963,560	843,802
Benefit cost ratio:							2.1

Table D-7. Summary of Quantifiable Present Value Costs and Benefits

	Costs, dollars	Benefits	
		Water, dollars	Water, ac-ft
PCWA	843,802	1,802,778	38,505
CALFED	None	1,802,778 ^a	38,505

^a See text.

Table D-8. Summary of Non-Quantifiable Costs and Benefits

	Non-quantified costs	Non-quantified benefits
PCWA	None	<ul style="list-style-type: none">Increased water supply reliabilityIncreased water supply accounting
CALFED	None	<ul style="list-style-type: none">Increased water supply reliability to water users while at the same time assuring the availability of sufficient water to meet fishery protection and restoration recovery needsMore water now for Bay-Delta use since there is a delay of PCWA's date of need of full water right entitlements
Energy provider	None	<ul style="list-style-type: none">Energy savings as a result of less water pumped into the system.
Yuba River Ecosystem	None	<ul style="list-style-type: none">Improved aquatic and terrestrial habitat in South Yuba RiverMore water available to meet fishery protection and restoration recovery needs

E. OUTREACH, COMMUNITY INVOLVEMENT AND ACCEPTANCE

This project is consistent with the California Urban Water Conservation Council's Memorandum of Understanding regarding water conservation. It is also consistent with PCWA's Water Forum Agreement and the Regional Water Authority (RWA). A letter of support from RWA is included in Appendix C.

Because this project provides a regional-wide benefit, outreach efforts will not focus on any particular customer sector. Due to the nature of this project it is not appropriate nor practical to extend the project to specifically target disadvantaged communities within the County. There are no tribal entities particularly impacted by this project.

On projects that impact its customer's water service, PCWA sends out written notification or uses door hangers to inform the impacted customers of the pending service interruption. Generally the notification is mailed out in sufficient time to be received approximately three days prior to the service interruption. Door hangers, if used, are also disbursed approximately three days prior to the service interruption. Emergency numbers are identified on both the written and door hanger notices. Normally, the notification will include a backup date in case there is some complication that deems it inappropriate to have the service shut down. If traffic or access will be impacted this is also covered in the notification process.

If PCWA is not able to conduct the work at the times identified in the notices, new notices with the new dates will be given to the customers and property owners as identified above.

Information on the results of this project will be disseminated through the PCWA's public outreach program. PCWA operates an extensive public information program and associated schools program, which provide materials, speakers, and outreach activities to the general public.

Outreach activities will include publications and Web site development, public meetings, PCWA participation at community events, multimedia campaigns, interagency partnerships, corporate environmental fairs, professional trade shows, water conservation workshops and seminars and a speakers bureau.

Summaries of the results and benefits of this project will be developed by PCWA staff and made available to PCWA customers. Inserts will be included in billing mailer inserts, newsletters, and agency Web sites.

APPENDIX A

Figures, Preliminary Plans, Specifications, and Certification Statements

TABLE OF CONTENTS

Figures

- Figure A-1. Placer Street Pipe Replacement
- Figure A-2. Donnington Avenue Pipe Replacement
- Figure A-3. Placerado Avenue Pipe Replacement
- Figure A-4. Pleasant Avenue Pipe Replacement
- Figure A-5. Fulweiler Avenue Pipe Replacement

Preliminary Specifications and Plans *(Items 1-4 will be developed. A draft of Item 5 is included.)*

- 1. Electronic Meter Purchase and Installation
- 2. Meter Accuracy Testing Plan
- 3. Water Audit Plan
- 4. Leak Detection Survey Requirements
- 5. Leak Repair Requirements

Improvement Standards

- 1. General Conditions for Private Work – Pipeline Extension Agreements and Service Orders

Section T – Technical Provisions

- 1. Piping and Plumbing
 - 1.1 Treated Waterline Piping
 - 1.1.1 Ductile Iron Pipe
 - 1.1.2 Polyvinyl Chloride (PVC) Pressure Pipe
 - 1.1.3 Steel Pipe
 - 1.1.4 Bedding and Backfill
 - 1.1.5 Cathodic Protection
 - 1.2 Treated Water Service Piping
 - 1.2.1 Copper
 - 1.2.2 Polyvinyl Chloride (PVC)
 - 1.2.3 Polyethylene

Section T – Technical Provisions (continued)

- 1.6 Installation and Testing
 - 1.6.1 Location of Existing and New Utilities
 - 1.6.2 Quality Control
 - 1.6.3 Laying of Pipe
 - 1.6.4 Bedding and Backfill
 - 1.6.5 Connections to Existing Pipelines
 - 1.6.6 Abandonment of Existing Facilities
 - 1.6.7 Hydrostatic Testing
 - 1.6.8 Disinfection/Chlorination and Flushing
 - 1.6.9 Continuity Testing
 - 1.6.10 Drilling Service Taps
- 3. Earthwork
 - 3.1 Scope
 - 3.2 Trench Excavation
 - 3.3 Trench Width
 - 3.4 Special Foundation Bedding Treatment
 - 3.5 Trench Backfill
 - 3.5.1 Bedding and Backfill
 - 3.5.2 Sand Slurry Backfill
 - 3.5.3 Compaction
 - 3.6 Embankment Construction
 - 3.7 Structure Backfill

Standard Drawings

- SA4 Standard Service Connection, Meters 1” and Smaller
- SA5 Standard Service Connection, Meters 1-1/2” and 2”
- SA10 Pipe Trench Bedding and Backfilling
- SA11 Water/Sewer Crossing and Parallel Pipe Construction

Standard Specification/Drawing Revisions

- 1.2 Treated Water Service Piping
- 3. Earthwork
 - SA4 Standard Service Connection, Meters 1” and Smaller
 - SA5 Standard Service Connection, Meters 1-1/2” and 2”
 - SA10 Pipe Trench Bedding and Backfilling
 - SA11 Water/Sewer Crossing and Parallel Pipe Construction

Certification Statements

Insert Figures A-1 through A-5
Insert Specifications

Certification Statements

Engineering feasibility statement

I, MAYARD Donald Reighley Jr. a California registered civil engineer, have reviewed the information presented in support of this application. Based on this information, and any other knowledge I have regarding the proposed project, I find that it can be designed, constructed, and operated to accomplish the purpose for which it is planned. There is a sufficient water supply for the project. The information I have reviewed to document this statement is included (provide list, e.g., feasibility studies, engineering design studies, water rights permits, etc.).

Documents Reviewed:

1. TASK SCHEDULE
2. STANDARDS AND SPECIFICATIONS

M. Donald Reighley Jr.
(Original signature and stamp with expiration date)



APPENDIX B

Resume

Work Experience

Placer County Water Agency - July 1989-Present

Increasing responsibility from Resident Engineer overseeing construction of a 15 mgd water treatment plant expansion and a 10 million gallon water storage tank to Director of Field Services responsible for canal operations and maintenance, treated water pipeline maintenance, warehouse and fleet maintenance. Over 10 years associated with Placer County Water Agency's raw water distribution system.

Guy F. Atkinson - April 1984-July 1989

Increased responsibility from Field Engineer to Project Engineer on dam sites in Utah and California, and a project in Virginia building islands.

Nevada Bureau of Mines and Geology - 1980-1982

Research Assistant performing Earthquake Hazard Mapping around Reno, Nevada.

Education

Master of Science: Geological Engineering from McKay School of Mines, University of Nevada-Reno, 1983.

Master of Business Administration: University of Nevada-Reno, 1983.

Bachelor of Science: Civil Engineering, University of the Pacific, 1980.

Certifications

Registered as a Professional Engineer in the State of California.

State of California Dept of Health Services Grade 4 Water Distribution Operator.

State of California Dept of Health Services Grade 3 Water Treatment Plant Operator.

American Water Works Association Grade 3 Water Distribution Operator.

Miscellaneous

Member of AWWA Water Distribution Operator Certification Committee

APPENDIX C

Letter of Support

Insert Letter of Support

APPENDIX D

Detailed Budget Spreadsheets

Detailed Budget

Placer Street from Chamberlain South to 6" AC

Item	Justification	Labor		Other direct costs, dollars	Total, dollars	PCWA portion	Prop 13 portion
		Hours	Dollars				
Land Purchase /Easement	N / A	0	0	0	0	0	0
Planning/Design/Engineering	Environmental Doc., in-house design and bid	125	7,300	17,000	24,300	0	24,300
Materials/Installation	Publicly bid construction contract	0	0	58,000	58,000	29,000	29,000
Structures	N / A	0	0	0	0	0	0
Equipment	N / A	0	0	0	0	0	0
Purchases/Rentals	N / A	0	0	0	0	0	0
Environmental Mitigation/Enhancement	N / A	0	0	0	0	0	0
Construction/Administration/Overhead	Project Management, Inspection, Geotechnical, Mapping, Clerical	284	22,660	7,000	29,660	0	29,660
Project/Legal/License Fees	Legal and Encroachment Permit fees	0	0	3,500	3,500	0	3,500
Contingency					0	0	0
Other					0	0	0
Project Total					115,460	29,000	86,460

Detailed Budget

Donnington Avenue from Placerado to Camino

Item	Justification	Labor		Other direct costs, dollars	Total, dollars	PCWA portion	Prop 13 portion
		Hours	Dollars				
Land Purchase /Easement	N / A	0	0	0	0	0	0
Planning/Design/Engineering	Environmental Doc in-house. Design by contract	40	2,000	15,000	17,000	0	17,000
Materials/Installation	Publicly bid construction contract	0	0	93,000	93,000	46,500	46,500
Structures	N / A	0	0	0	0	0	0
Equipment	N / A	0	0	0	0	0	0
Purchases/Rentals	N / A	0	0	0	0	0	0
Environmental	N / A	0	0	0	0	0	0
Mitigation/Enhancement	N / A	0	0	0	0	0	0
Construction/Administration/Overhead	Project Management, Bidding Assist, Inspection, Clerical, Testing	545	44,560	2,500	47,060	0	47,060
Project/Legal/License Fees	Legal and Encroachment Permit	0	0	2,000	2,000	0	2,000
Contingency					0	0	0
Other					0	0	0
Project Total					159,060	46,500	112,560

Detailed Budget

Placerado Avenue from Broadview to Marina

Item	Justification	Labor		Other direct costs, dollars	Total, dollars	PCWA portion	Prop 13 portion
		Hours	Dollars				
Land Purchase /Easement	N / A	0	0	0	0	0	0
Planning/Design/Engineering	Environmental Doc., in-house design and bid	175	10,700	20,000	30,700	0	30,700
Materials/Installation	Publicly bid construction contract	0	0	90,000	90,000	45,000	45,000
Structures	N / A	0	0	0	0	0	0
Equipment	N / A	0	0	0	0	0	0
Purchases/Rentals	N / A	0	0	0	0	0	0
Environmental	N / A	0	0	0	0	0	0
Mitigation/Enhancement	N / A	0	0	0	0	0	0
Construction/Administration/Overhead	Project Management, Inspection, Geotechnical, Mapping, Clerical	544	44,460	10,000	54,460	0	54,460
Project/Legal/License Fees	Legal and Encroachment Permit fees	0	0	5,000	5,000	0	5,000
Contingency					0	0	0
Other					0	0	0
Project Total					180,160	45,000	135,160

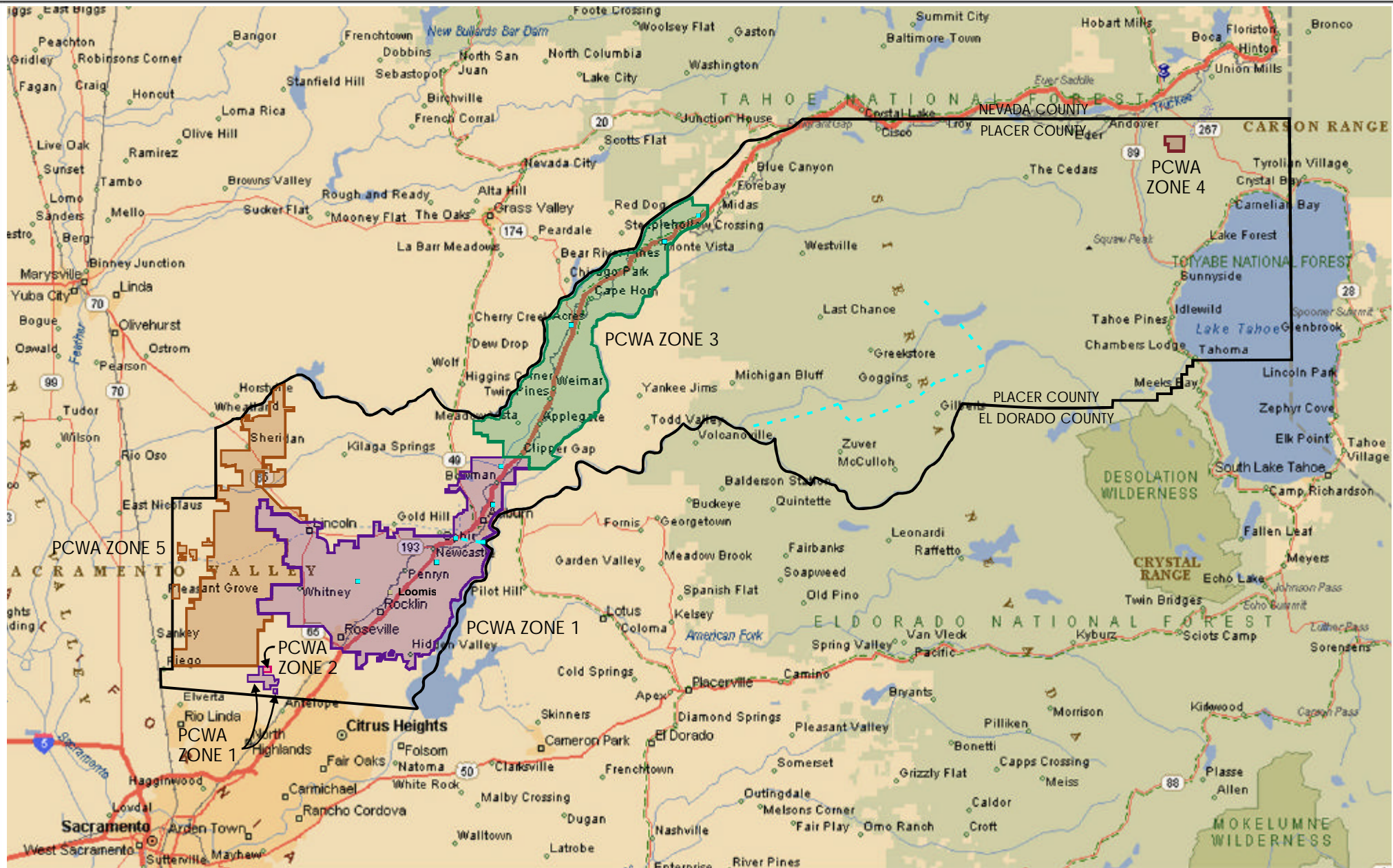
Detailed Budget

Pleasant Street 450 LF from AC Pipe toward High Street

Item	Justification	Labor		Other direct costs, dollars	Total, dollars	PCWA portion	Prop 13 portion
		Hours	Dollars				
Land Purchase /Easement	N / A	0	0	0	0	0	0
Planning/Design/Engineering	Environmental Doc in-house. Design by contract	8	400	16,500	16,900	0	16,900
Materials/Installation	Construction Contract	0	0	85,000	85,000	42,500	42,500
Structures	N / A	0	0	0	0	0	0
Equipment	N / A	0	0	0	0	0	0
Purchases/Rentals	N / A	0	0	0	0	0	0
Environmental	N / A	0	0	0	0	0	0
Mitigation/Enhancement	N / A	0	0	0	0	0	0
Construction/Administration/Overhead	Project Management, Bidding Assist, Inspection, Clerical, Testing	545	44,560	2,500	47,060	0	47,060
Project/Legal/License Fees	Legal and Encroachment Permit	0	0	2,000	2,000	0	2,000
Contingency					0	0	0
Other					0	0	0
Project Total					150,960	42,500	108,460

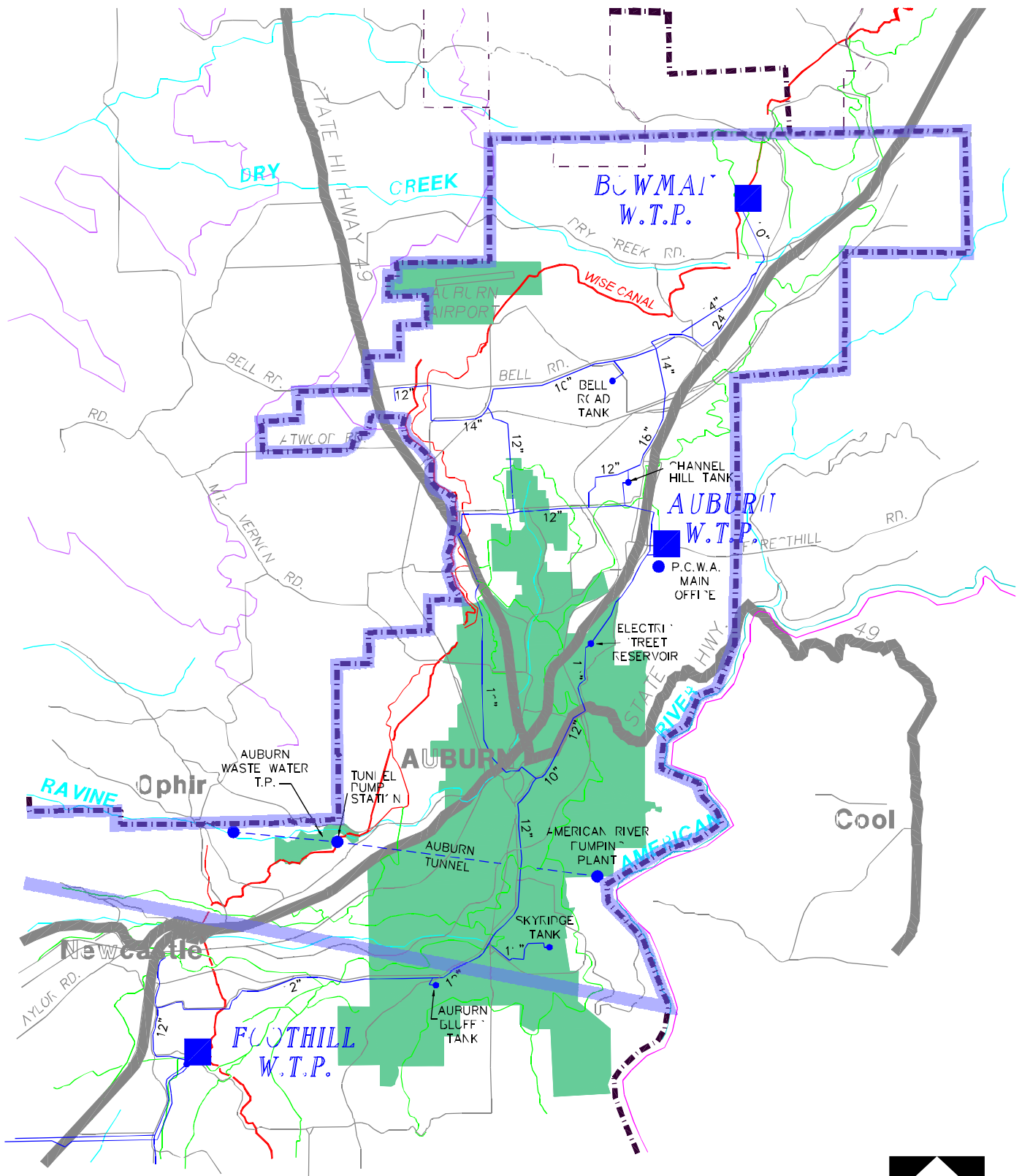
Detailed Budget
Fulweiler Avenue Nevada Street to Carson Avenue

Item	Justification	Labor		Other direct costs, dollars	Total, dollars	PCWA portion	Prop 13 portion
		Hours	Dollars				
Land Purchase /Easement	N / A	0	0	0	0	0	0
Planning/Design/Engineering	Environmental Doc., In-house design and bid	185	11,500	34,000	45,500	0	45,500
Materials/Installation	Publicly bid construction contract	0	0	242,000	242,000	121,000	121,000
Structures	N / A	0	0	0	0	0	0
Equipment	N / A	0	0	0	0	0	0
Purchases/Rentals	N / A	0	0	0	0	0	0
Environmental	N / A	0	0	0	0	0	0
Mitigation/Enhancement	N / A	0	0	0	0	0	0
Construction/Administration/Overhead	Project Management, Inspection, Geotechnical, Clerical, Mapping	623	50,420	13,000	63,420	0	63,420
Project/Legal/License Fees	Legal and Encroachment Permit fees	0	0	7,000	7,000	0	7,000
Contingency					0	0	0
Other					0	0	0
Project Total					357,920	121,000	236,920



Source: Microsoft Trip Planner 98

B R O W N A N D C A L D W E L L	DATE	2-22-02	Placer County Water Agency, Auburn, California	NORTH FIGURE 1
	PROJECT	20649-002		
			Location Map	



Placer County Water Agency Boundary
Auburn-Bowman Domestic System Water Boundary

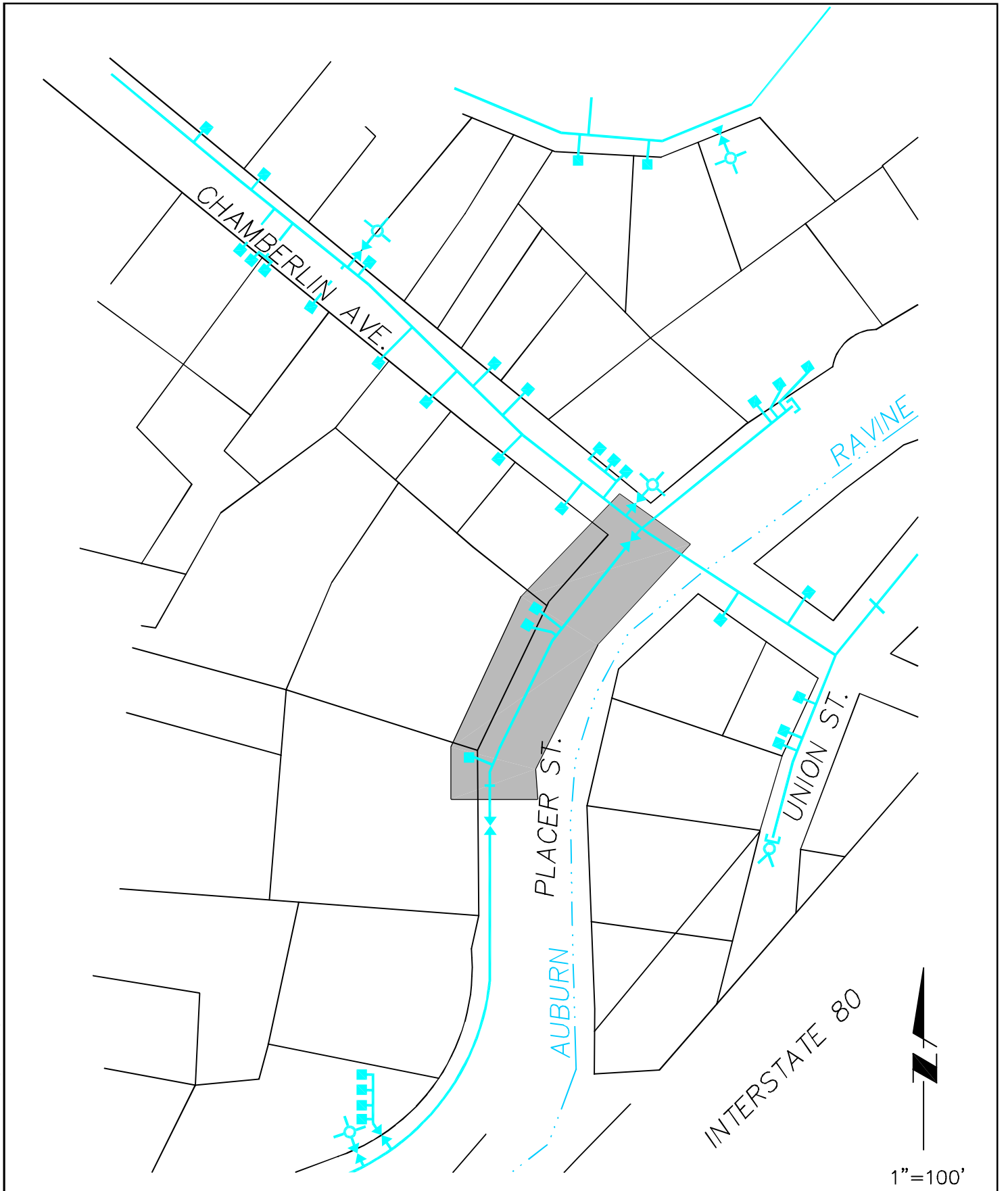
Source: Placer County Water Agency



0 3,000 6,000
Scale in Feet

DATE 2-22-02	PROJECT 20649-002	SITE Placer County Water Agency, Auburn, California	FIGURE 2
BROWN AND CALDWELL		TITLE Auburn-Bowman Domestic System Water Facilities	

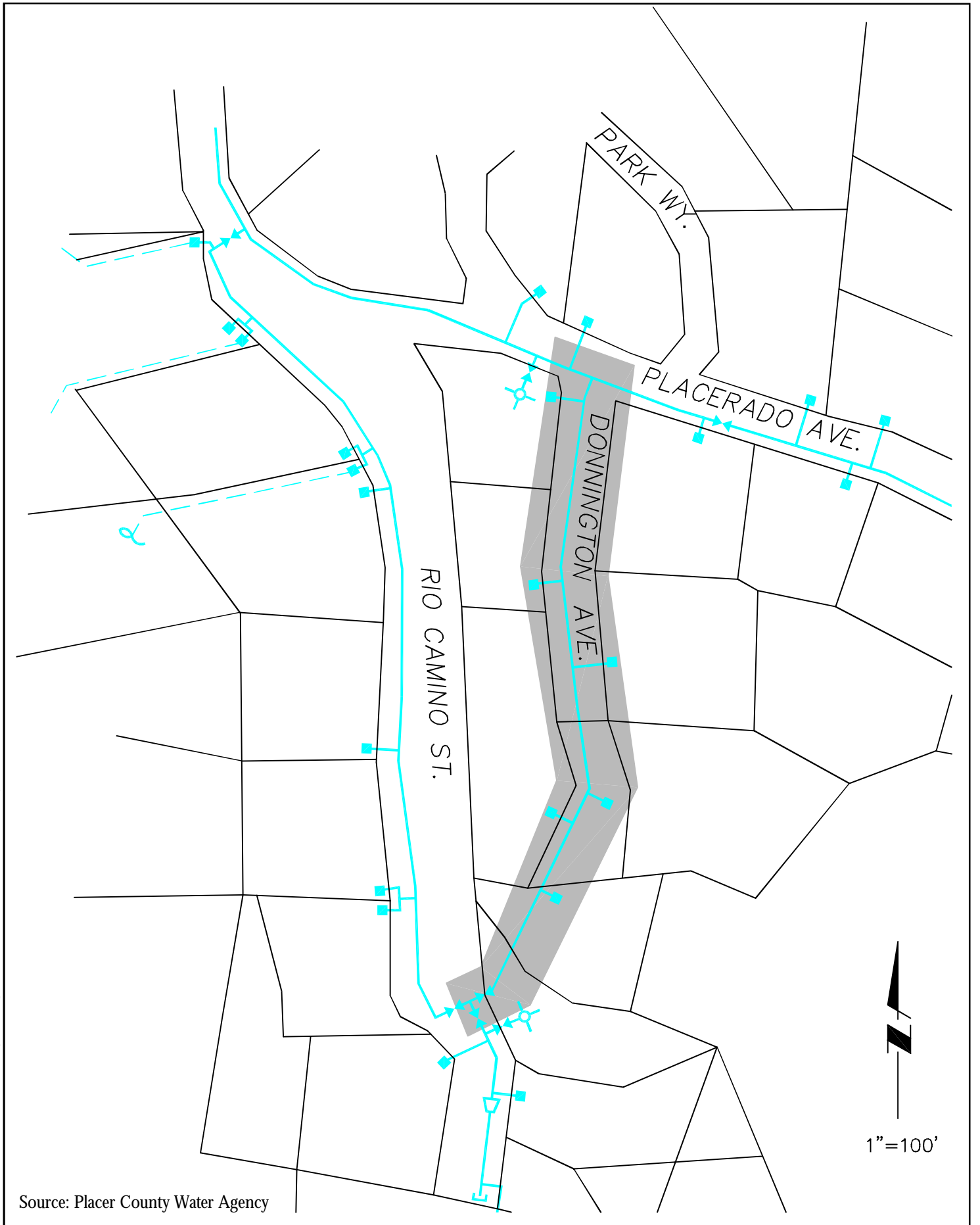
P:\20000\20649-PCWA\CALFED-PROP 13 Funding\Funding-Mar 2002\Task 002-Auburn Leak Repair



Source: Placer County Water Agency

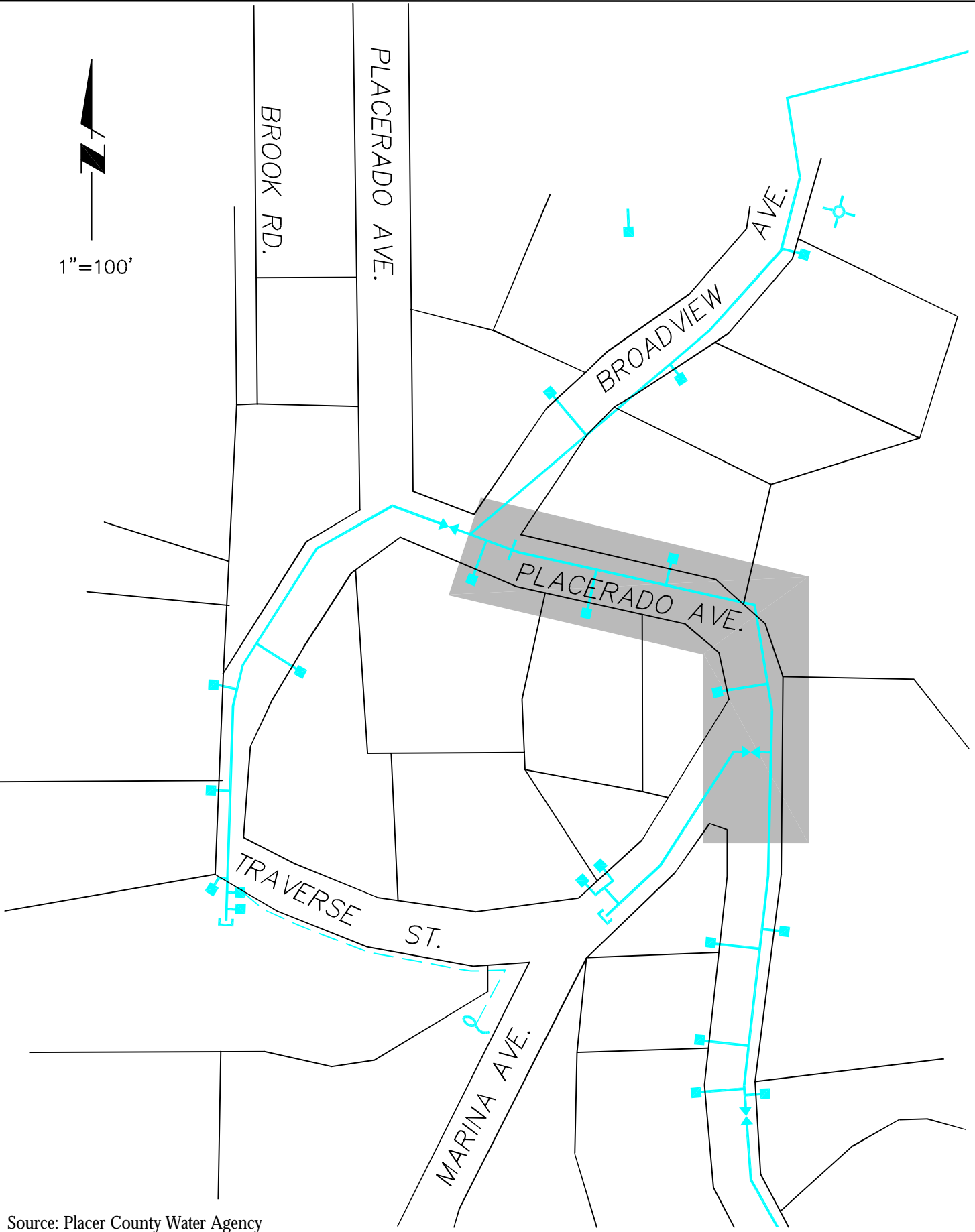
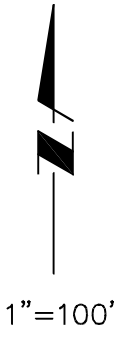
DATE	2-26-02	PROJECT	20649-002	SITE	Placer County Water Agency, Auburn, California	FIGURE
B R O W N A N D C A L D W E L L				TITLE	Placer Street Pipe Replacement	A-1

P:\20000\20649-PCWA\CALFED-PROP 13 Funding\Funding-Mar 2002\Task 002-Auburn Leak Repair



Source: Placer County Water Agency

DATE	2-26-02	PROJECT	20649-002	SITE	Placer County Water Agency, Auburn, California	FIGURE	A-2
B R O W N A N D C A L D W E L L							



Source: Placer County Water Agency

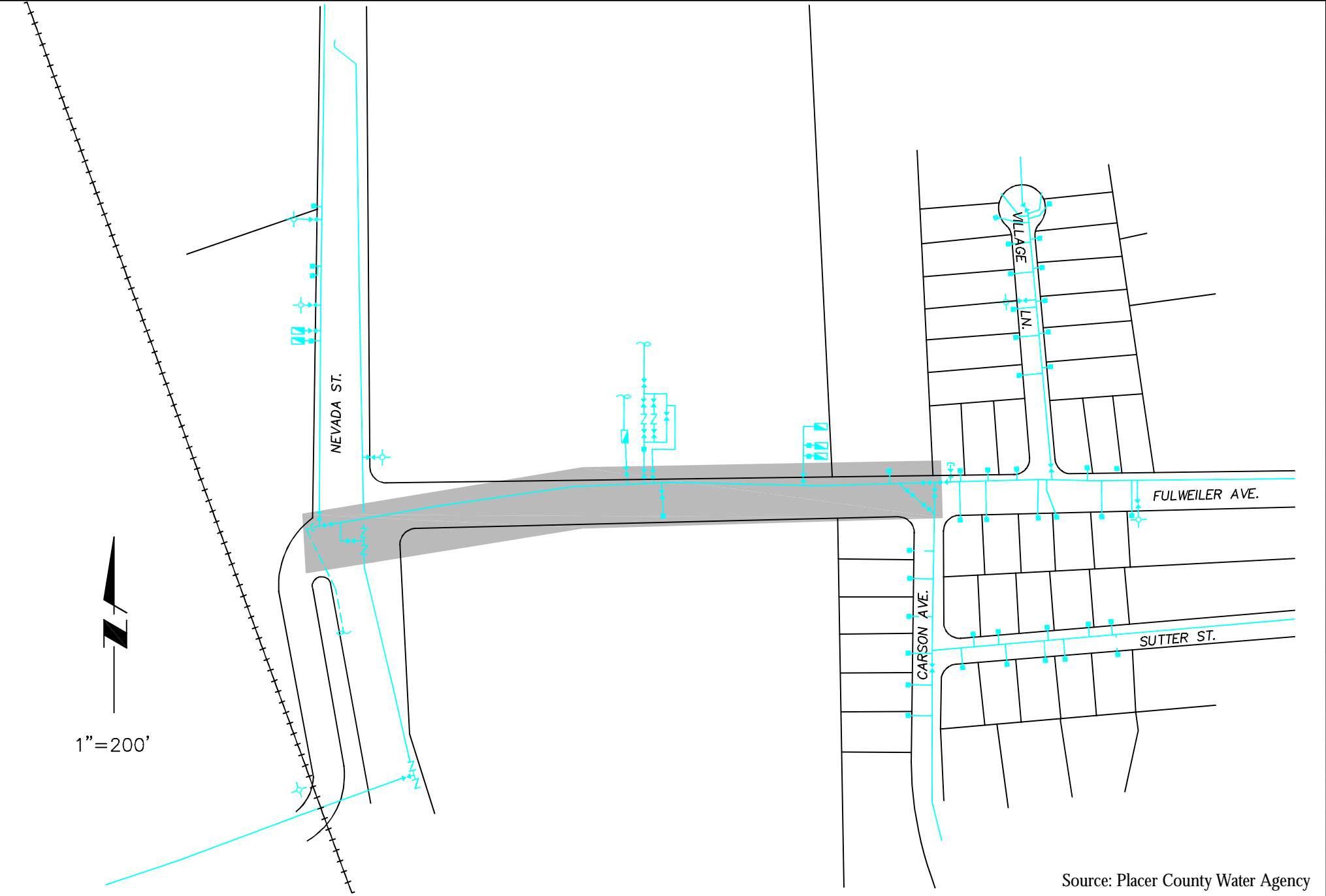
P:\20000\20649-PCWA\CALFED-PROP 13 Funding\Funding-Mar 2002\Task 002-Auburn Leak Repair

DATE	2-26-02	PROJECT	20649-002	SITE	Placer County Water Agency, Auburn, California	FIGURE
B R O W N A N D C A L D W E L L				TITLE		
				Placerado Avenue Pipe Replacement		A-3



Source: Placer County Water Agency

B R O W N A N D C A L D W E L L	DATE	2-26-02	Placer County Water Agency, Auburn, California	FIGURE A-4
	PROJECT	20649-002	Pleasant Avenue Pipe Replacement	



B R O W N A N D C A L D W E L L	DATE	2-26-02	Placer County Water Agency, Auburn, California	FIGURE A-5
	PROJECT	20649-002		
		TITLE	Fulweiler Avenue Pipe Replacement	

PLACER COUNTY WATER AGENCY
P.O. Box 6570
Auburn, CA 95604

IMPROVEMENT STANDARDS

1. GENERAL CONDITIONS FOR PRIVATE WORK,
PIPELINE EXTENSION AGREEMENTS AND SERVICE ORDERS

1.1. Release for Construction - Before release for construction of any work to be done under a Pipeline Extension Agreement (PLX) or Service Order (SO), the plans shall be approved and signed by the Chief Engineer; the PLX/SO agreement shall be signed by the PLX/SO Applicant and the Agency; all necessary deposits and fees shall be paid; approved insurance certificates shall be received; and all required easements shall be submitted and accepted by the Agency.

Any work done prior to release for construction may not be accepted by the Agency.

1.2. Standards - All water facilities to be accepted for ownership and maintenance by PCWA, including but not limited to water and service lines, service boxes, valves and all miscellaneous appurtenances, shall conform to the latest revision of the Agency's Specifications. The PLX/SO Applicant, and the PLX/SO Applicant's Developer, Engineer, Contractor and/or Architects shall be responsible for obtaining all necessary information, requirements, specifications and drawings from the Agency necessary to design, bid and complete the work as shown on the approved plans.

1.3. Insurance - Unless otherwise specified in the PLX/SO Agreement, the PLX/SO Applicant, or the PLX/SO Applicant's Contractor, shall carry general and automobile liability insurance in the amount of at least \$1,000,000, with a maximum \$1,000 deductible, which insurance shall be primary and underlying to the Agency's insurance and specifically name the Agency as an additional insured and certificate holder. General Liability must include: comprehensive form, premises/operations, underground, explosion and collapse hazard, products/completed operations, contractual, independent contractors, broad form property damage, and personal injury. Automobile Liability must include: any auto, hired autos and non-owned autos. Worker's Compensation and Employer's Liability complying with State of California requirements must be in force. All of these policies shall contain an endorsement providing that written notice shall be given to the Agency at least 10 days prior to termination, cancellation or reduction of coverage in the policy. Builders' Risk Coverage shall be required if any above-ground structure is shown on plans. The limits shall be job specific.

Before releasing for construction, the PLX Applicant, or the PLX Applicant's Contractor, shall furnish the Agency an acceptable certificate(s) of insurance as satisfactory proof of general

liability, automobile liability, worker's compensation and employers' liability, and builders' risk insurance in compliance with these requirements, and upon request, certified copies of the policies must be furnished by the insurance companies to the Agency.

1.4. Indemnification - The PLX/SO Applicant shall assume the defense of, and indemnify and save harmless the Agency, its Directors, agents, employees and volunteers from all claims, costs, losses, damages and expenses, including attorneys' fees of any kind arising from the performance of the PLX Agreement, including claims for personal injury or death, claims for damage to property, and claims for loss of business. The PLX/SO Applicant agrees to require that in any Agreement and/or Contract entered into with any one for the performance of work under a PLX Agreement that all work will be done pursuant to the Agency's Specifications; and that the Contractor shall indemnify and save harmless the Agency, its Directors, agents, employees and volunteers from all claims of any kind arising from the Contractor's performance under the PLX/SO Agreement, including claims for personal injury and death, claims for damages to property and claims for loss of business.

1.5. Notification - Developer and/or Contractor shall contact the Agency Inspector (823-4885) forty eight (48) hours prior to beginning water line installation, or any excavation within twenty four inches (24") of any existing Agency facilities. This information shall include PLX number or SO number and type of work planned. The Contractor shall contact the Agency Inspector by 7:30 a.m. each and every day that work shall be performed on or near Agency facilities.

The Contractor shall notify all other public agencies affected by the proposed construction and shall obtain and pay all costs for any and all required permits.

1.6. Inspection - One or more inspectors may be assigned by the Chief Engineer to observe any and/or all the work. The inspector(s) may inspect any part of the work and/or materials and shall have full authority to accept or reject said work and/or materials. Such inspection shall not relieve the Developer and/or Contractor of the obligation to conduct comprehensive inspections of the work, to furnish acceptable materials, perform acceptable work and to provide adequate safety precautions.

The PLX/SO Applicant shall be billed and shall pay all Agency inspection costs, including costs for mapping, clerical support, and engineering review for the PLX/SO.

1.7. Grade Established - No work shall be performed or installation made until street subgrades have been established to the satisfaction of the Chief Engineer.

1.8. Existing Utility Location - For location of existing water lines, appurtenances and other utilities, the Developer and/or Contractor or any subcontractor on a project shall notify U.S.A.

(Underground Service Alert) 48 hours before performing excavation work by calling the toll-free number (800)642-2444. Not all existing utility owners participate in USA and proper procedures for location vary. Proper location is the Developer's and/or the Contractor's responsibility.

1.9. Staking - The PLX Applicant or the Applicant's Contractor shall provide stakes for line and grade for the water installation.

1.10. Compaction Testing - The Agency shall provide compaction testing, and the PLX/SO Applicant shall be billed and shall pay the Agency's direct costs.

1.11. Hot Taps - The Contractor or sub-contractor shall make the hot taps, and the Contractor performing the hot tap(s) shall be approved by the Chief Engineer.

For any hot tap, the Contractor shall expose pipe to confirm existing pipe outside diameter (O.D.) and pipe type prior to ordering and installing materials; a minimum of 48 hours notice for inspection is required prior to exposing the pipe. The Agency Inspector must witness installation of tapping saddle and tapping valve, which shall pass an air test of fifty (50) psi for five (5) minutes before the hot tap is done. The Agency Inspector must witness the actual hot tap.

1.12. Testing, Chlorination & Flushing - The Contractor shall provide all labor and materials required for hydrostatic and bacteriological testing, chlorination, and flushing.

1.13. Submittals - The Contractor shall furnish four (4) copies of submittals for approval by the Chief Engineer for all pumping, reducing or electrical facilities and for any materials and/or installations not covered and/or specified in the Technical Provisions or detailed on the Plans.

1.14. Fire Hydrants - All public fire hydrants installed by the PLX/SO Applicant shall belong to the local public agency having control of fire protection in that area and shall be operated and maintained by that agency the same as other hydrants in the area.

In certain instances fire hydrants will be privately owned and maintained. This shall be shown on the approved plans. Application for service for private hydrants shall be completed by the PLX/SO Applicant before acceptance of the PLX/SO installation.

1.15. Construction Water - Any and all water to be used shall be arranged through the Agency's Customer Service Department (916)823-4850. All construction water charges shall be paid prior to acceptance of the job.

1.16. Water Service Before Acceptance - Water service before acceptance may be requested by the PLX/SO Applicant for house construction, testing, models and landscaping. Water service before acceptance shall never be provided to any third (3rd) party

or be used for living purposes or occupancy. All requests shall be made to the Agency Inspector at the Engineering Department and shall be approved at the discretion of the Engineering Department.

The water system installation must be substantially complete, including acceptable pressure and bacteria tests, but can be without final grade adjustment pending completion of grading, other utilities, etc. and paving.

All fees and charges for the PLX/SO must have been paid. Any Maintenance Guarantees required by the PLX/SO Agreement must be received and approved by both the Controller and the Engineering Department.

Written request for water service before acceptance must be received stating use (house construction, testing, models, and/or landscape). The Applicant agrees that such water service may be terminated at the discretion of the Chief Engineer for noncompliance with terms of the PLX/SO Agreement, failure to actively pursue completion of Agreement, or nonpayment of charges when notification is sent. The Applicant accepts full responsibility for any and all possible damages to or because of water installation or resulting from any termination of service.

1.16.1. Jumpers Before Acceptance - Requests for jumper pipes to provide water for house construction and/or plumbing tests must be accompanied by a \$100 connection fee and appropriate security deposit (\$200 up to one inch (1") and five hundred dollars (\$500) for larger than one inch (1")) for each jumper requested. Jumper pipes shall be supplied by the Agency and installed by the Applicant. Billing shall be the standby charge for the jumper pipe size requested.

1.16.2. Meters Before Acceptance - Requests for meters to provide water for models and/or landscaping must be accompanied by the appropriate security deposits (\$200 up to one inch (1") and \$500 for larger than one inch (1")) for each meter requested, and/or return of previously provided jumper pipe for that service. Meters shall be supplied and installed by the Agency. Billings shall be per rate Schedule No. 1 of the Agency's Personnel and Administrative Manual.

1.16.3. Disposition at Time of Acceptance - Before acceptance of the water facilities provided for in the PLX, all jumper pipes shall be returned and all accounts shall be brought current. After acceptance of such facilities, meter presets shall be transferred to permanent account status and applicable security deposits shall be refunded.

1.17. Performance Guarantee and Maintenance Guarantee - Before work is commenced, the PLX/SO Applicant or the Applicant's Contractor shall provide the Agency a performance guarantee in the amount of 100% of actual cost of water improvements as estimated by the Chief Engineer. After completion of work and before acceptance by the Agency, a maintenance guarantee in the amount of 50% of the

performance guarantee shall be provided by the Applicant or the Applicant's Contractor. A cash deposit in an amount adequate to cover such guarantees may be provided. Such maintenance guarantee shall remain good for a period of one (1) year after acceptance by the Agency of all facilities installed under the PLX/SO Agreement.

1.18. Guarantee - PLX/SO Applicant shall provide a maintenance guarantee in the amount of fifty percent (50%) of the Agency's estimate of the construction cost. Such guarantee shall be good for one (1) year from the date of acceptance of the water facilities by the Agency. The form of guarantee shall be approved by the Agency Controller and Engineering Department.

1.19. Acceptance - Agency assumes no obligation for maintenance of the facilities included in a PLX/SO Agreement until such time as they are formally accepted in writing by the Agency. Any costs incurred by the Agency due to emergency or other repairs prior to final acceptance by the Agency shall be billed to, and paid by, the PLX/SO Applicant.

The PLX/SO Applicant shall be notified in writing of acceptance of such facilities when they are satisfactorily installed in accordance with the Agency's Approved Plans and the Agency's current Specifications, all grading and paving is completed with all necessary facilities raised to grade, all utilities are installed, all required easements received and recorded, two (2) copies of the recorded final map with addresses marked for each lot or parcel are provided, the required maintenance guarantee is received and accepted, and the PLX/SO account and any charges and/or costs in connection with the PLX/SO are paid in full.

Immediately upon acceptance all rights, titles, and interest in the pipeline extension, and all other facilities therein mentioned, shall be vested in the Agency.

PLACER COUNTY WATER AGENCY

P.O. Box 6570

Auburn, CA 95604

SECTION T - TECHNICAL PROVISIONS

1. PIPING AND PLUMBING

1.1. Treated Waterline Piping - Allowable treated waterline pipe materials shall be Ductile Iron Pipe and Polyvinyl Chloride (PVC) Pressure Pipe and Steel Pipe. Specifications for individual pipe materials are given below.

Design Conditions:

- A. Depth of cover to be minimum of 30 inches.
- B. Trench width shall be a minimum of 1 pipe diameter plus 12 inches.
- C. Bedding tamped to 12 inches above pipe, load factor 1.5.
- D. Soil density 150 pounds per cubic foot.
- E. Bedding angle 90 degrees.
- F. Live load AASHTO H-20, 16,000 pound wheel load.
- G. Rigid pipe 1.5 factor of safety versus crushing.
- H. Flexible pipe allowable deflection - as specified by pipe manufacturer.
- I. Above design conditions apply to an empty conduit with no internal pressure.
- J. Ductile iron pipe shall be installed adjacent to and forty feet on either side of fuel tanks, fueling stations, or individual properties using volatile material on the property, unless soils testing is submitted showing no volatile material exist in the trench envelope.

1.1.1. Ductile Iron Pipe

1.1.1.1. Material - Ductile iron water pipe shall conform to AWWA C151 specifications. Ductile iron pipe shall be pressure class 350 for pipe sizes 12 inch and smaller, pressure class 300 for 14 to 20 inch, pressure class 200 for 24 inch pipe, and pressure class 150 for pipes 30 inches and larger. Higher pressure class shall be used where the working pressure of the pipe exceeds the pressure class shown.

1.1.1.2. Joints - Lengths of ductile iron pipe shall be joined by slip-on type joint or mechanical type joint as shown on the plans with rubber rings furnished by the manufacturer of the pipe and designed for use with the pipe being installed. Assembly of pipe and joints shall follow the manufacturer's instructions. After assembly of each slip-on joint the final

location of rubber rings within each joint shall be checked by gauge as recommended by the manufacturer.

Joints between ductile iron pipe and fittings shall be slip-on type, mechanical type or flanged as shown on the plans. Slip-on type joints shall be sealed by means of rubber rings designed for use with the pipe being installed. Rubber rings resistant to fuels shall be used forty feet on either side of property using or containing volatile materials.

Joints between ductile iron pipe and other types of pipe shall be made by means of the proper sized and type compression adapter.

1.1.1.3. Fittings - The fittings shall be designed to meet the design requirements of the adjacent pipe used. All fittings shall be smooth and free from defects.

Fittings shall be ductile iron or fabricated steel.

Fittings shall be manufactured in accordance with AWWA Standard C110, 111, 115 and 153. Ductile iron fittings shall be protected with a petroleum asphaltic lining and coating. Fabricated steel fittings shall be fusion epoxy lined and coated.

Bolts and nuts shall be carbon steel, ASTM A307, Grade A; hex head, or tee-head.

1.1.2. Polyvinyl Chloride (PVC) Pressure Pipe - All PVC pressure pipe shall have cast-iron-pipe-equivalent outside diameters.

1.1.2.1. Small Diameter PVC - Polyvinyl Chloride (PVC) Pressure Pipe, 4 inches to 12 inches, shall conform to current AWWA C-900 and have Underwriters' Laboratories, Factory Mutual and NSF approval. All parts of C-900 not in conflict with these specifications shall apply in full force. PVC pipe shall be dimension ratio (DR) 18, class 150 for internal working pressures up to 130 psi; use DR 14, class 200 for internal working pressures between 130 psi and 180 psi. For internal working pressures greater than 180 psi, pipe DR/class shall be determined by the Engineer.

PVC pipe that has been exposed to the sun and become discolored shall not be installed if the date printed on the pipe indicates the pipe was manufactured two or more years prior to the installation date. If the date printed on the pipe has been destroyed or altered and the pipe is discolored, the pipe shall not be installed.

1.1.2.2. Large Diameter PVC - PVC pipe in sizes 14 inches through 24 inches, manufactured to AWWA C905 standards, shall be allowed. Use dimension ratio (DR), 18, pressure rating (PR) 165 for internal working pressures up to 130 psi; use DR 14, PR 200 for internal working pressures between 130 psi and 180 psi. For internal working pressures greater than 180 psi, pipe DR/PR shall be determined by the Engineer. AWWA C905 larger than 24 inches is not allowed.

PVC pipe that has been exposed to the sun and become discolored shall not be installed if the date printed on the pipe indicates the pipe was manufactured two or more years prior to the installation date. If the date printed on the pipe has been destroyed or altered and the pipe is discolored, the pipe shall not be installed.

1.1.2.3. Joints - Lengths of PVC shall be joined by a locked-in flexible elastomeric gasket coupling with bell and spigot configuration. Lubricants intended for use with PVC pipe shall be compatible with the plastic material and not adversely affect the potable quality of the water being transported.

Joints between PVC pipe and fittings shall be slip-on type or mechanical type as shown on the plans. Slip-on type joints shall be sealed by means of rubber rings designated for use with the type of pipe being installed.

Joints between PVC pipe and other types of pipe shall be made by means of the proper sized compression type adaptor.

1.1.2.4 Fittings - Fittings shall be cast or ductile iron fittings.

1.1.3. Steel Pipe - Two types of steel pipe shall be allowed for 10 inch to 54 inch diameters:

1.1.3.1. Steel Cylinder Pipe - Steel pipe shall be steel cylinders, cement-mortar lined and coated. Steel pipe shall be manufactured in conformance with AWWA C200. Minimum steel wall thickness shall be 0.188 inches for pipes 10 inches to 36 inches and 0.2500 inches for pipes from 38 inches to 54 inches. Cement-Mortar lining and coating shall conform to AWWA C205. Prior to fabrication, the Contractor shall submit the manufacturer's design calculations to the Engineer for approval.

1.1.3.2. Pretensioned Reinforced Concrete Steel Pipe - Steel pipe shall be pretensioned reinforced concrete steel cylinder

pipe in conformance with AWWA C303. Prior to fabrication, the Contractor shall submit the manufacturer's design calculations to the Engineer for approval.

1.1.3.3. Pipe Lengths - Pipeline laying lengths shall be standardized at lengths of either 20 feet or 40 feet except where shorter lengths are required for fittings, curves and closures.

1.1.3.4. Joints - Lengths of steel pipe shall be joined by a locked-in flexible elastomeric gasket coupling with bell and spigot configuration unless welded bell and spigot joints, mechanically coupled joints or bolted flanges are designated on the plans or in the specifications. Field welding shall conform to AWWA Specification C206. Flanges, bolts and gaskets shall conform to AWWA C207. Flanges shall be Class D or E. Each bell and spigot joint shall be sealed with a sand mortar. The mortar shall be applied on the interior and exterior according to the pipe manufacturers recommendations. Each joint shall be physically inspected by the Engineer prior to closing the pipe trench.

1.1.3.5. Fittings - Joints between steel pipe and fittings shall be welded, slip-on type or mechanical type as shown on the plans. Slip-on type joints shall be sealed by means of rubber rings designated for use with the pipe being installed.

Fittings shall be cement mortar coated and lined to a thickness equal to the coating on the adjacent pipe.

1.1.3.6. Repairs - All repairs shall be made subject to the approval of the Engineer, and any injury to the protective lining and coating of the pipe, or to the caulking or jointing material, shall be carefully and completely repaired.

1.1.4 Bedding and Backfill - See Earthwork Section 3.1 through Section 3.7

1.1.5 Cathodic Protection - See Cathodic Protection, Section 8.1 and Section 8.2

1.2. Treated Water Service Piping - ~~SEE ATTACHED REVISIONS - 5/8 inch, 3/4 inch and 1 inch meters shall be served with 1 inch service piping. Allowable 1 inch service piping shall be copper or polyethylene. Services shall not have joints beneath man made improvements.~~

~~1 1/2 inch and 2 inch meters shall be served with 2 inch service piping. Allowable 2 inch service piping shall be copper or polyvinyl chloride Schedule 80.~~

~~3 inch and larger meters shall be served with 4 inch or larger or 8 inch piping. Allowable service piping shall be as shown in Sections 1.1.1 or 1.1.2. Pipe shall be in even size increments.~~

~~2 inch and larger service piping shall have a buried gate valve with 2 inch square operating nut that is accessible through a valve box at the main.~~

~~Meters three inches (3") and larger shall have bypass piping around the meter. A ball valve shall be installed in the bypass pipeline. The ball valve shall be lockable. (See Drawing SA006).~~

~~Specifications for individual pipe materials as follow.~~

~~1.2.1. Copper - SEE ATTACHED REVISIONS Copper pipe shall be type K, soft, manufactured according to ASTM B88.~~

~~1.2.2. Polyvinyl Chloride (PVC) - Two inch diameter polyvinyl chloride pipe shall be Schedule 80, and shall conform to ASTM Designation D1784 for rigid PVC compounds. It shall bear the National Sanitation Foundation seal of approval and shall conform with the requirements of commercial standard 256 and ASTM D 2241.~~

~~Pipe shall be manufactured to Iron Pipe Size (IPS) dimensions and furnished in minimum standard lengths of 20 feet. 4 inch and larger diameter polyvinyl chloride shall conform to current AWWA C-900.~~

~~All chemical feed piping 3 inch and smaller shall be Schedule 80 PVC as specified in this section.~~

~~All PVC fittings shall be molded fittings manufactured of the same material as the pipe and shall be suitable for either solvent weld or screwed connections. Solvent weld type couplings and fittings shall be of a pressure rating greater than that of the pipe and shall be of a type recommended by the pipe manufacturer.~~

~~1.2.3. Polyethylene - Polyethylene (PE) pipe shall conform to AWWA C-901, Standard designation PE 3408, SDR 9, Class 200 and shall be copper tube size.~~

~~1.3. Raw Water Piping - For pressure flow, allowable raw water pipe materials shall be reinforced concrete pressure pipe, steel pipe, ductile iron pipe, polyvinyl chloride (PVC) and fusion welded high density polyethylene. For open channel flow, gauge steel pipe or corrugated high density polyethylene pipe shall be allowed.~~

to pumps and other mechanical equipment, shall be Perflex 980, Series 110 or 111, Holz Rubber Company, Lodi, California.

1.4.27. Water Facility Markers - Water facility markers shall be installed in all unpaved areas as detailed in Standard Drawing No. SA 030.

1.4.28 Restrained Joints - **SEE ATTACHED REVISIONS** Restrained joints shall be designed such that the joint has the same lateral strength as the pipeline or can restrain the forces exerted on the pipeline. The method of restraint shall be approved by the Engineer.

1.4.29 Corrosion Control - All buried gate valves 6" and larger and all buried butterfly valves shall have buried magnesium anodes as required by these specifications.

1.4.30 Tie-in Sleeves - **SEE ATTACHED REVISIONS.**

1.5. Backflow Devices - All backflow prevention assemblies shall be installed in accordance with PCWA Improvement Standards Section 4 Cross Connection Control. See Standard Drawings No. SA007 and SA008.

1.6. Installation and Testing

1.6.1. Location of Existing and New Utilities - Location of all utilities shown on plans is approximate. At least 2 working days prior to starting work on the project, Underground Service alert (USA) shall be contacted at (800)642-2444 for location by the Contractor. The locations of various utilities shown on the plans is solely an accommodation to the Contractor without any representation or guarantee concerning completeness and/or accuracy. The Contractor is responsible for ascertaining the locations of, and providing protection for, all utilities to be encountered in the performance of the required work.

1.6.2. Quality Control - The Contractor shall use appropriate quality control procedures to ensure that all pipe and fittings shall be of the first grade and quality conforming to these Specifications. Pipe shall be stored and transported in a proper manner and kept clean after delivery to the job site. All work on pipe shall be performed in a skillful and professional manner.

1.6.3. Laying of Pipe - Pipe shall be laid and joined in accordance with manufacturer's and/or Engineer's directions. Necessary facilities including slings shall be provided for lowering and properly placing pipe sections into trench without damage.

Each section of pipe shall be thoroughly cleaned before it is lowered into the trench.

If clean pipe sections and fittings cannot be placed in the trench without getting dirt into open pipe, the Engineer may require a piece of material to be tied over the ends of the pipe or fitting until it has been lowered into position in the trench. After the pipe has been lowered into the trench, all foreign matter shall be completely brushed from the pipe ends before assembly.

The pipe shall be cut to provide closure pieces of correct lengths to permit the proper location of the pipe sections, or to locate valves, fittings, and appurtenant structures where specified on plans.

The pipe and fittings shall be laid to the lines and grades specified on plans, and centered in the trench. All pipe to be laid upgrade for grades in excess of 10%. All horizontal and/or vertical bends consisting of 11-1/4 degrees or more shall be thrust with concrete as shown on Standard Drawing No. SA 15.

The alignment and elevation of the pipeline as shown on the drawings are designed to avoid conflict with new and existing underground utilities as far as their locations are known which is the responsibility of others.

Trenches must be kept dry until pipe has been laid, joints closed and backfill completed to a depth of 1 foot above top of pipe. Crushed rock for drainage and/or bedding shall be provided as necessary.

Temporary water tight plugs shall be provided for closure of the open ends of the pipelines each time pipe laying activity stops and at the end of each working day to prevent the entry of dirt and/or other contaminants.

1.6.4. Bedding and Backfill Placement - Bedding and backfill in pipe trenches shall be of the type, placement and compaction as shown in Standard Drawing No. SA 10 and as referenced in Technical Provisions Section 3.5.1.

All backfill shall be carefully placed and spread in uniform horizontal layers (lifts) not exceeding 12 inches. Backfill shall be placed to about the same elevation on both sides of the pipe to prevent unequal loading and displacement of pipe. Backfill shall be placed to minimum depth of 30 inches above the top of the pipe unless shown otherwise on plans.

1.6.5. Connections to Existing Pipelines - All connections to existing pipelines shall be made as shown on the plans and in

accordance with these Specifications.

Where the existing main is provided with fittings for connecting to the new main, the face of the connection shall be clean and free of all foreign materials. The Contractor shall remove the plug, cap or blind flange, clean the ends, and make the new joint.

Where the existing main is not provided with fittings for connecting to the new main, connections shall be made either by hot tap or by cutting and inserting sections of pipe and fittings, as shown on the plans or as directed by the Engineer.

For hot tap installations, the tapping saddle shall have a test plug and shall be air tested at 50 psi for 5 minutes. Tapping valves shall be flange by flange. All hot taps shall be witnessed by the Agency Inspector.

When deemed necessary by the Engineer, shutdowns of existing in-service pipeline and other distribution facilities shall be made by the Agency as required to complete pipeline connections. A shutdown shall be for as short a period as possible and shall be scheduled by the Engineer. The amount of lead time necessary for shutdown and connection to existing mains varies with each job and must be planned accordingly. In no case shall a shutdown and/or connection be scheduled with less than 11 days notice. Absolutely no connection operations shall occur prior to passing pressure and bacteria tests. Interference with the operation of the Agency's distribution system shall be kept at a minimum. While an existing pipeline is shut down, the connection work shall be performed without interruption, continuing after regular working hours if necessary, until completed, unless otherwise directed by the Engineer. In some cases, shutdowns must occur at times other than normal working hours and/or days.

In all cases, shutdowns shall be made under the direction of the Engineer. The Agency shall close all valves in making a shutdown and shall open all valves to restore pressure to the existing main, as well as initiate pressure to the new installation.

The Engineer shall be notified at least 11 working days prior to any connection operations so that advance preparation on the part of the Agency can be made, and shall confirm such advance notice in writing.

1.6.6. Abandonment of Existing Facilities - Existing facilities shall be abandoned as indicated on the plans and specifications.

Ends of pipelines 4 inches and larger to be abandoned in place shall be plugged with concrete for a distance of not less than 12 inches, unless otherwise shown on the plans.

1.6.7. Hydrostatic Testing - Backfill shall meet and pass all compaction requirements and subgrade shall be completed prior to hydrostatic testing. The Engineer shall be notified forty eight (48) hours prior to testing and must approve any water placement in any portion of the pipeline. The pipeline shall be filled with water and all air evacuated.

For treated water lines, the pressure shall then be slowly increased to 150 psi or 150% of working pressure, whichever is greater. The test pressure shall be maintained for at least 2 hours. Accurate means shall be provided for measuring the quantity of water required to maintain full pressure on the line for the test period. The maximum allowable leakage shall be per the pipe manufacturer's recommendations or as directed by the Engineer.

For canal piping the maximum allowable leakage shall be 25 gallons per inch diameter, per 1000 lineal foot, per 24 hours. RCP shall be tested to the class rating of the pipe at the lowest point in elevation in the test section.

All or part of the pipeline may be drained as necessary to repair leaks. All leaks shall be repaired in a manner approved by the Engineer and retested before being accepted by the Agency. The Contractor shall provide all labor, equipment, and materials, required for filling and testing the pipelines. After successful completion of the hydrostatic test, the chlorination flushing, bacteriological test and high velocity flushing may be completed.

1.6.8. Disinfection/Chlorination and Flushing - After successful completion of the hydrostatic test, the Contractor shall chlorinate the pipeline per AWWA C651-86 by completely filling the main and appurtenances with water having a minimum of 50 parts per million (ppm) and a maximum of 100 parts per million (ppm) of available chlorine from calcium hypochlorite. The only disinfection method allowed shall be the continuous-feed method. The chlorinated water shall be retained in the main for at least 24 hours. At the end of this 24 hour period the treated water in all portions of the main and appurtenances shall have a residual of not less than 25 parts per million (ppm).

After chlorination the pipeline shall be flushed per AWWA C651-86 Section 6.2. The water shall then remain unmoved for a minimum of forty eight (48) hours after which the Agency shall collect bacteriological samples which shall be tested for coliform of less than 2.2 parts per million (ppm) by an independent laboratory. The number and location of samples shall be determined by the Engineer and shall be randomly chosen from fire hydrants and services. If emergency work is under way, disinfection is to be per AWWA C651-86 Section 9.

The Contractor shall make the necessary piping connections and furnish and install all necessary equipment required for the high velocity flushing operations. The Contractor shall provide for safe and legal disposal of water from such flushings. The Contractor shall remove all temporary flushing facilities. All costs for chlorination and flushing shall be paid by the Contractor.

1.6.9. Continuity Testing - The Contractor shall test for the continuity of the locating wire at time of final walk-thru. The Contractor shall provide all labor, equipment, and materials required for testing the continuity of the locating wire at each meter, valve, fire hydrant, blow off, and AVR. Should continuity not be present and/or observed, the Contractor shall repair, replace, and retest as necessary, entirely at Contractor's expense.

1.6.10 Drilling Service Taps - PVC service taps shall be drilled using a sharp shell cutter such that the entire plug and remains are extruded from the pipe.

PLACER COUNTY WATER AGENCY

P.O. Box 6570

Auburn, CA 95604

SECTION T - TECHNICAL PROVISIONS

3. EARTHWORK SEE ATTACHED REVISIONS

3.1. Scope - SEE ATTACHED REVISIONS ~~This work shall consist of performing all operations necessary to excavate earth and rock or other material, of whatever nature, including removing water, regardless of character and subsurface conditions necessary for the construction of the project facilities; placing backfill for all project facilities, including site grading, structures, transmission piping, electrical underground conduit, ditch and channel excavation, culverts, minor concrete structures, roadwork, removing and replacing unsuitable material; placing embankment material for all required project facilities; other earthwork shown on the plans and indicated in the Specifications including excavating and backfilling all structures, trenches and depressions resulting from the removal of obstructions, removing and replacing unsuitable material.~~

3.2. Trench Excavation - SEE ATTACHED REVISIONS ~~Trench excavation shall include the removal of all materials or obstructions of any nature, except as otherwise specified to be protected, the installation and removal of all sheeting and bracing and the control of water, necessary to construct the work as shown. Unless otherwise indicated on the drawings or permitted by the Engineer, excavation shall be open cut. Trenching machines may be used except where their use will result in damage to existing facilities or where hand trenching is required to prevent damage to trees, tree roots, or other utilities.~~

~~All paving shall be saw cut to a neat line which is wider than the trench by 1 1/2 times the thickness of the AC paving, or 3 inches minimum at each trench wall. Where concrete paving is encountered it shall be saw cut a minimum of 6 inches wider than the trench at each trench wall.~~

3.3. Trench Width - SEE ATTACHED REVISIONS ~~Maximum trench width at the top of the pipe shall be as shown on the Standard Drawings for the designated type bedding.~~

~~If the maximum width at the top of the pipe as shown on the plans is exceeded by 4 inches, for any reason, the Contractor shall provide at his own expense, stronger pipe, or corrected bedding conditions as approved by the Engineer to meet the load requirements of the changed conditions. Trenches shall meet OSHA requirements.~~

3.4. Special Foundation Bedding Treatment - SEE ATTACHED REVISIONS Whenever the bottom of the trench is soft, yielding, or in the opinion of the Engineer, otherwise unsuitable as a foundation for the pipe, the unsuitable material shall be removed to a depth such that when replaced with bedding material or 3/4 inch minus drain rock, it shall provide a stable and satisfactory foundation. Whenever the trench bottom is in rocky material, the trench shall be excavated to 6 inches below the flowline and backfilled with bedding material as specified.

3.5. Trench Backfill - SEE ATTACHED REVISIONS Pipe shall be bedded and backfilled uniformly throughout its length. The specified bedding shall be placed to give the required minimum thickness after placing the pipe and shall be compacted to give a uniform surface for laying the pipe.

Pipe shall not bear on bells, couplings, or joints. The trench shall be excavated at these locations as necessary to provide at least 2 inches of bedding material below the bell, coupling, or joint. No permanent wedging and/or blocking of pipe shall be permitted. Care shall be taken not to compact the material beneath the bells, couplings, or joints.

In connection with these Specifications, tests shall be made in accordance with the Caltrans Standard Specifications, and these requirements:

Tests	ASTM	Test Method No. California
Relative Compaction	D 1557 70	216 or 231
Sand Equivalent		217
Resistance (R Value)		301
Sieve Analysis		302

3.5.1. Bedding and Backfill - SEE ATTACHED REVISIONS Bedding shall be the material placed between the bottom of the trench and the bottom of the bells, couplings, or joints of pipe and shall be no less than 6 inches in depth. Backfill shall be the material placed from the top of the bedding to the top of the trench or to the bottom of the road section.

Bedding and backfill material shall consist of select sand or decomposed granite (d.g.). This backfill material shall consist of clean sandy material with 90 % passing a 3/4 inch sieve, 100% passing the 1 inch sieve, and free from vegetative matter and other deleterious substances. The select material shall be able to be compacted readily under watering to form a firm, stable base. The material shall have a minimum Sand Equivalent of 20 (SE20).

Three quarter inch minus crushed rock shall be used only in areas with groundwater and with approval and/or direction of Engineer and

~~road controlling agency.~~

3.5.2. Sand Slurry Backfill - ~~SEE ATTACHED REVISIONS~~ The Contractor may use a sand slurry as backfill. The sand slurry shall be delivered to the job site in a transit mix truck and deposited in the trench immediately after delivery. The sand slurry shall have the following mix:

MATERIAL	% BY VOLUME
SAND	23
WATER	73
ENTRAPPED AIR	4
TOTAL:	100

Sand material shall be as described above in Section 3.5.1. Sand slurry backfill can be used if approved by Engineer.

3.5.3 Compaction - ~~SEE ATTACHED REVISIONS~~ The initial backfill shall be placed immediately after the pipe joints have been completed and inspected. The backfill shall be carefully placed so as not to disturb and/or damage the pipe and/or joints, and shall be brought up evenly on both sides of the pipe. The initial backfill shall be manually compacted using care not to damage the pipe or joints to a relative compaction of 90%. "Manually compacted" does not exclude careful use of hand controlled, power operated units such as air tampers, vibrating tampers, or other hand controlled tools used so as not to damage the pipe or joints.

Compaction by jetting shall not be allowed.

When backfilling has reached a level 18 inches below the surface of the ground, or to the bottom of trench restoration, time shall be given for the excess water to drain. Specified backfill material shall then be compacted in 8 inch layers by some alternate method which shall ensure that backfill is compacted as required on Standard Drawing No. SA 10.

Compaction of backfill shall be performed in layers not exceeding 12 inches and shall be compacted to a density as shown on Standard Drawing No. SA 10. The backfill material shall be moisture conditioned to within 2% of optimum.

The location and depth of all compaction tests shall be determined by the Engineer. If a test fails, the area shall be reworked and retested to the satisfaction of the Agency and until passing tests are achieved.

In trenches placed in easements, which are not in traveled County,

~~City, Town and State road rights of way, backfill shall be compacted with a 2 inch mound so that drainage to the trench shall not occur.~~

3.6. Embankment Construction - **SEE ATTACHED REVISIONS** Embankment shall be constructed of excavated or imported material that is free from organic matter, roots, debris, rocks larger than 3 inches in the greatest dimension, and shall not have more than 14% of the rocks larger than 1-1/2 inches, and shall have these properties:

Maximum Plasticity Index: 15

Maximum Percent Passing the No. 200 Sieve: 50

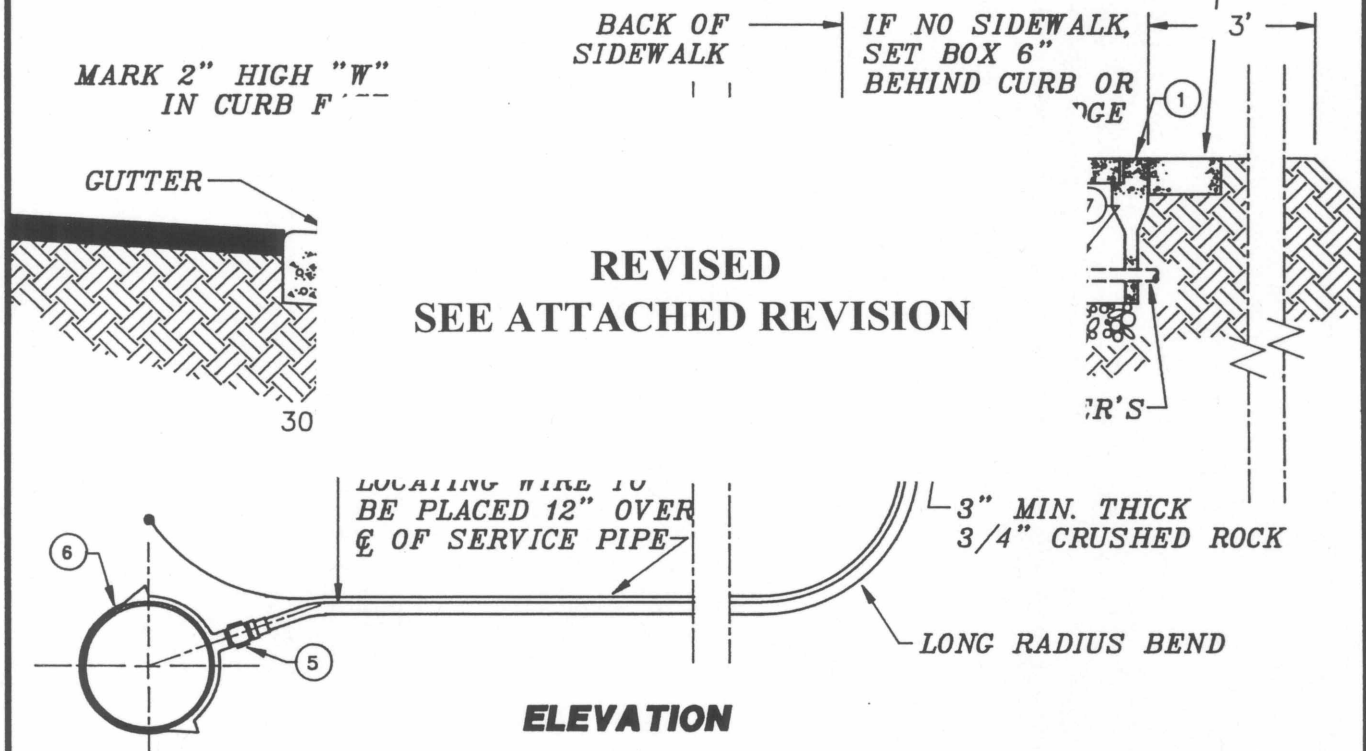
Placement and compaction of embankment material shall be in conformance with Caltrans Standard Specifications Sections 19 6.01 and 19 6.02. The material shall be moisture conditioned to within 2% of optimum.

3.7. Structure Backfill - **SEE ATTACHED REVISIONS** Backfill around structures shall be select material as described in Technical Provisions Section 3.5.1.

NOTES

1. ALL PIPE SHALL BE 1" COPPER OR POLYETHYLENE.
2. ALL PIPE CONNECTIONS SHALL BE THE COMPRESSION TYPE: MUELLER "INSTA-TITE"; FORD "PACK JOINT", OR EQUAL. PROVIDE METAL INSERT STIFFENER.
3. SERVICE METER AND PIPE MUST NOT BE IN DRIVEWAY.
4. LOCATING WIRE REQUIRED, ATTACHED TO MAINLINE LOCATING WIRE.
5. METER BOX SHALL BE CHRISTY B16 OR BESS C-16 WITH METAL READING PORT OR APPROVED EQUAL. METER FACE MUST BE EASILY READABLE THRU METAL PORT.

METER BOX SHALL BE INSTALLED LEVEL. IF IN SLOPING AREA, INSTALL METER BOX WITH 12" X 12" X 4" THICK CONCRETE PAD USED FOR SOIL EROSION CONTROL PER THE AGENCY ENGINEER.



ITEM	DESCRIPTION
1	METERBOX & COVER WITH READING PORT (TRAFFIC LID WHERE REQUIRED).
2	METER - SUPPLIED BY P.C.W.A.
3	METER TAIL
4	ANGLE METER STOP - MUELLER, FORD OR JONES, APPROPRIATELY SIZED.
5	CORPORATION STOP - MUELLER, FORD OR JONES.
6	SERVICE SADDLE-ROMAC STAINLESS WIDE STRAP, MUELLER BRONZE WIDE STRAP OR EQUAL WITH 1" I.P.T.
7	GATE VALVE - PCWA TO SUPPLY AND INSTALL.

PLACER COUNTY WATER AGENCY

**STANDARD SERVICE CONNECTION
METERS - 1' AND SMALLER**

DRAWN BY
H.O./D.C.C.

APPROVED

SCALE
NONE

DATE
5/19/93

DRAWING NO.

SA004

SHT.

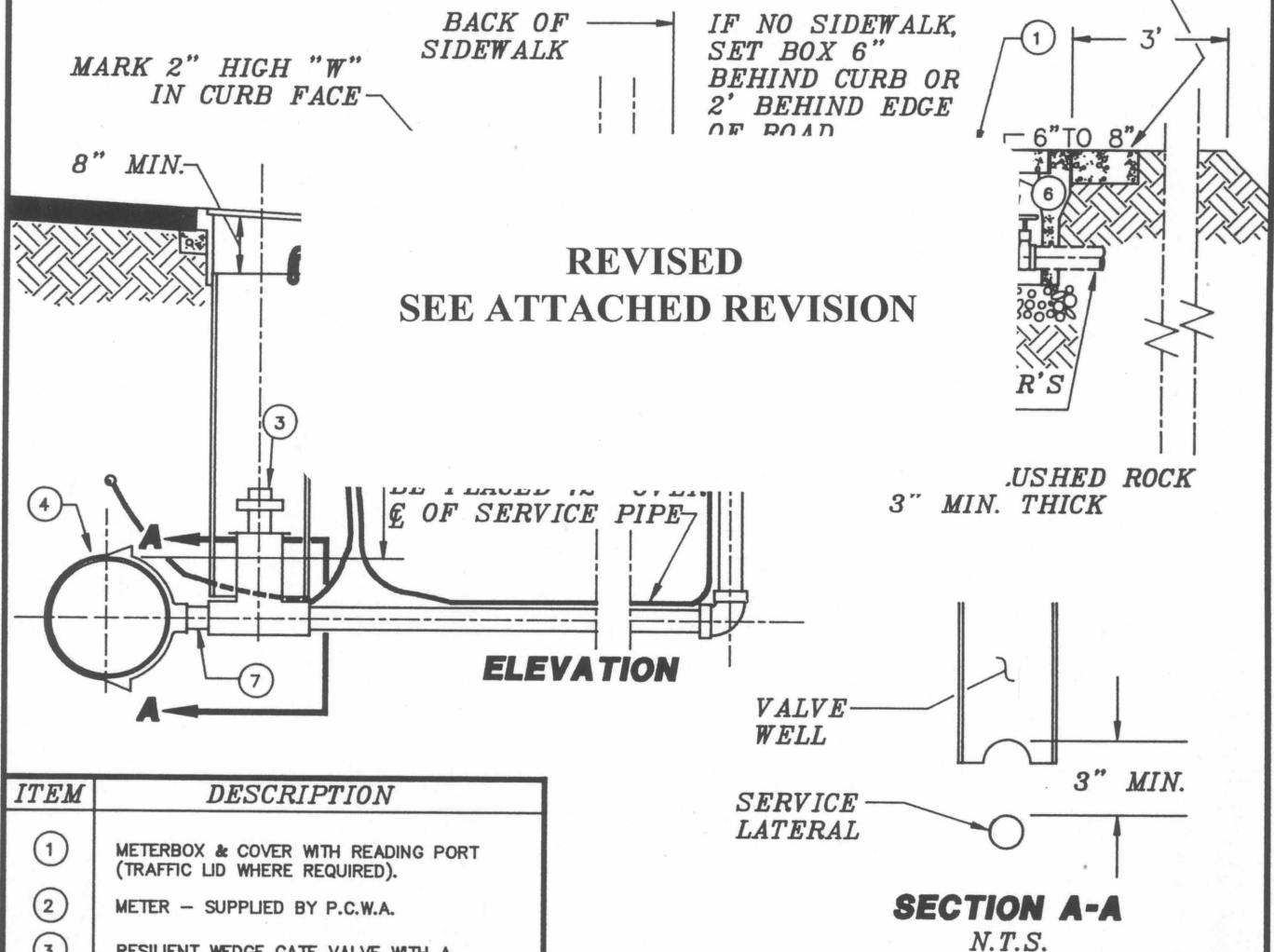
REV.

C

NOTES

1. FOR METERS 1-1/2" AND 2", ALL PIPE SHALL BE 2" SCH. 80 PVC OR COPPER.
2. SERVICE METER AND PIPE MUST NOT BE IN DRIVEWAY.
3. LOCATING WIRE REQUIRED, ATTACHED TO MAINLINE LOCATING WIRE.
4. FOR METERS 1-1/2" AND 2", METER BOX SHALL BE CHRISTY B36 OR BESS C-36 WITH METAL READING PORT OR APPROVED EQUAL. METER FACE MUST BE EASILY READABLE THRU PORT.
5. FOR 1-1/2" METER, SUPPLY 2" X 1-1/2" REDUCER FITTING.

METER BOX SHALL BE INSTALLED LEVEL. IF IN SLOPING AREA, INSTALL METER BOX WITH 12" X 12" X 4" THICK CONCRETE PAD OR METER PROTECTION WALL USED FOR SOIL EROSION CONTROL PER THE AGENCY ENGINEER.



ITEM	DESCRIPTION
1	METERBOX & COVER WITH READING PORT (TRAFFIC LID WHERE REQUIRED).
2	METER - SUPPLIED BY P.C.W.A.
3	RESILIENT WEDGE GATE VALVE WITH A 2" OPERATING NUT.
4	ROMAC STAINLESS WIDE STRAP, MUELLER BRONZE WIDE STRAP, OR EQUAL.
5	LOCKABLE 2" BRONZE BALL VALVE
6	GATE VALVE - AGENCY SUPPLIED & INSTALLED
7	BRASS NIPPLE

PLACER COUNTY WATER AGENCY

STANDARD SERVICE CONNECTION METERS 1-1/2' AND 2'

DRAWN BY
H.O./D.C.C.

APPROVED
E. L. MAISCH

SCALE
NONE

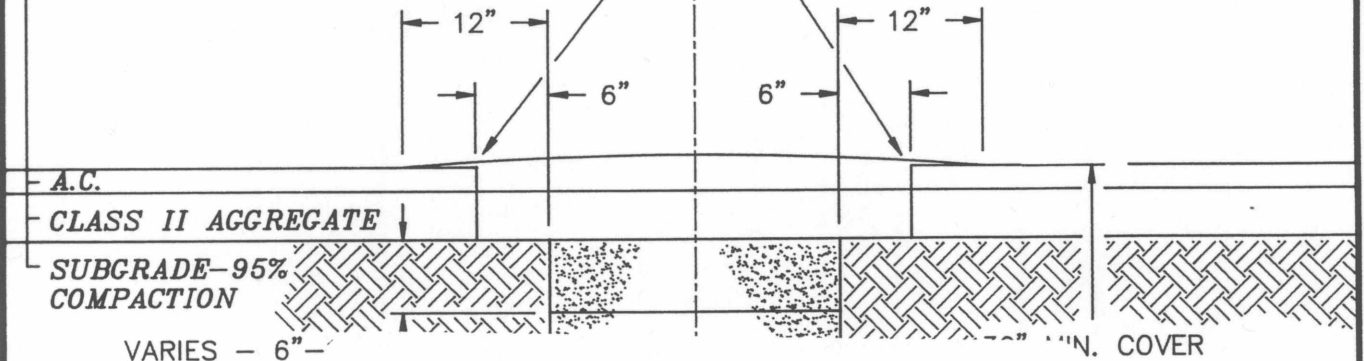
DATE
10/11/89

DRAWING NO.
SA005

SHT.
REV.
E

ROAD SECTION SHALL CONFORM
TO ROAD CONTROLLING
ENTITY'S SPECIFICATIONS

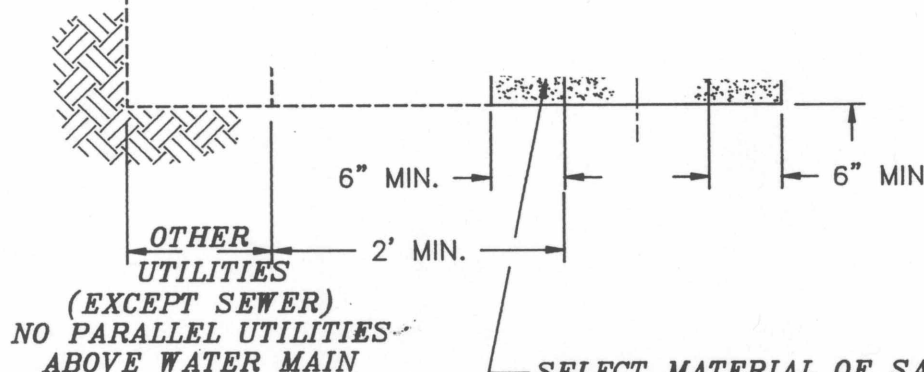
SAW CUT EXISTING PAVEMENT
PRIOR TO FINAL REPAIR



#10 A.W.G. INSULA
COPPER WIRE. SE.
STD. DWG. NO. SA

REVISED
SEE ATTACHED REVISION

BE LAID WITH
ON EACH JOINT



SELECT MATERIAL OF SAND OR
DECOMPOSED GRANITE WITH 90%
PASSING THE 3/4" SIEVE, &
100% PASSING THE 1" SIEVE;
HAVING S.E. 20. FREE OF
VEGETATIVE MATTER; 90% COMPACTION.

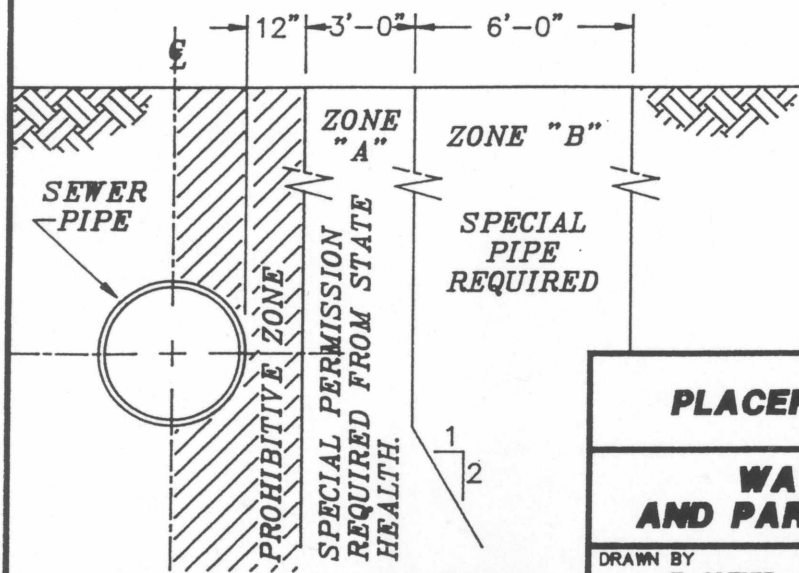
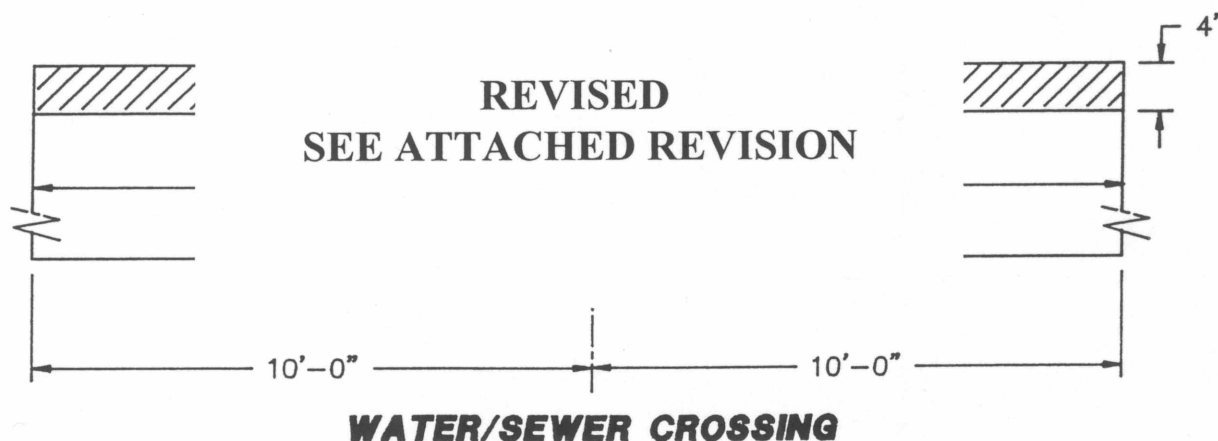
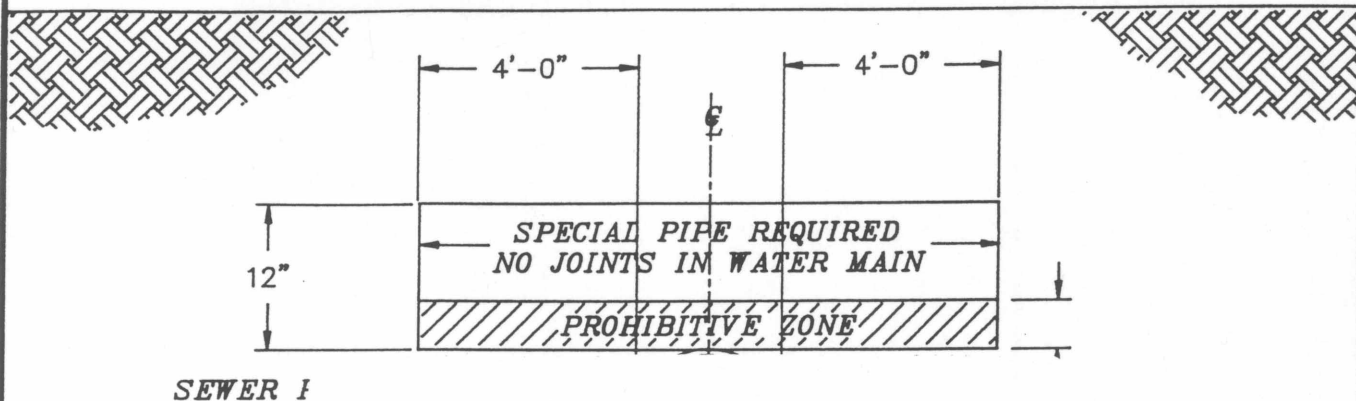
PLACER COUNTY WATER AGENCY

PIPE TRENCH BEDDING
AND BACKFILLING

DRAWN BY H.O./D.C.C.	SCALE NONE	DRAWING NO. SA010	SHT.	REV. C
APPROVED E. L. MAISCH	DATE 10/23/89			

NOTES

1. INSIDE NOMINAL DIAMETER OF DUCTILE IRON PIPE TO BE THE SAME AS THE EXISTING PIPE TO WHICH IT CONNECTS.
2. SPECIAL PIPE SHALL BE DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING, OR CLASS 200 PVC (DR14 PER AWWA C900 OR DR21 PER AWWA C905).
3. IF SEWER MAIN OR LATERAL IS CUT OR DAMAGED, THE LOCAL SEWER UTILITY MUST BE NOTIFIED.
4. ALTERATION OF SEWER GRADES WILL BE PERMITTED ONLY AFTER WRITTEN PERMISSION HAS BEEN RECEIVED BY P.C.W.A. FROM THE SEWER UTILITY.
5. STATE HEALTH AND LOCAL SEWER UTILITY REQUIREMENTS MUST BE MET.



PARALLEL PIPE CONSTRUCTION

PLACER COUNTY WATER AGENCY

**WATER/SEWER CROSSING
AND PARALLEL PIPE CONSTRUCTION**

DRAWN BY

H. OLIVER

SCALE

NONE

DRAWING NO.

SA011

SHT.

REV.

APPROVED

E. L. MAISCH

DATE

2/1/00

B

PLACER COUNTY WATER AGENCY
P.O. BOX 6570
AUBURN, CA 95603

MAY 12, 1998
STANDARD SPECIFICATIONS REVISIONS

SECTION T - TECHNICAL PROVISIONS
1 PIPING AND PLUMBING

- 1.2. Treated Water Service Piping – All service lines, valves, and fittings shall be in conformance with AWWA C800-89. 5/8-inch, 3/4-inch and 1-inch meters shall be served with minimum 1-inch service piping. 1-1/2-inch and 2-inch meters shall be served with minimum 2-inch service piping. Allowable 1-inch service piping shall be Type K copper or brass. Allowable 2-inch service piping shall be Type K copper or brass.

All joints in copper and brass shall be inspected by PCWA before backfilling. Joints shall be bronze compression connections as manufactured by Mueller 110, Jones J-2600 series, Ford Pack Joint or certified equal. When soldered fittings are used, the solder and fittings shall be lead free and approved for potable water service.

2-inch service piping shall have a 2-inch gate valve with 2-inch operator nut that is accessible through a valve box at the main as shown on Standard Drawings SA013 and SA014.

3 inch and larger meters shall be served with 4 inch or larger piping as shown on Standard Drawing SA006.

Meters three inches and larger shall have bypass piping around the meter. A ball valve shall be installed in the bypass pipeline. The ball valve shall be lockable. (See Drawing SA006).

PCWA recommends that water sensitive services with less than three inch meters should have bypass piping equal in size to the service piping.

Specifications for individual pipe materials are as follow.

1.2.1 Copper and Brass - Copper pipe shall be type K, hard or soft, in conformance with ASTM B88. Brass pipe shall be in conformance with ASTM B43.

1.4.5. Flange Gaskets - Flanges 4 inches through 36 inches shall be 1/8-inch thick drop in type SBR as manufactured by U.S. Pipe or approved equal. No bonding agent (i.e. Permatex) shall be used on the flange or gasket. The flange face shall be free of any foreign matter and/or rough surface.

1.4.6. Nuts and Bolts - Nuts and bolts shall be cadmium plated, zinc coated. Threads shall be coated with "Loctyte" anti-seize. The bolt shall extend at least 3 threads through the nut.

MAY 12, 1998 REVISION

PLACER COUNTY WATER AGENCY
P.O. BOX 6570
AUBURN, CA 95603

SECTION T - TECHNICAL PROVISIONS

3. EARTHWORK

3.1 Scope of Work - This work shall consist of: performing all operations necessary to excavate earth and rock or other material, of whatever nature, including removing water, regardless of character and subsurface conditions necessary for the construction of the project facilities; placing backfill for all project facilities, including site grading, structures, transmission piping, electrical underground conduit, ditch and channel excavation, culverts, minor concrete structures, roadwork; removing and replacing unsuitable material; placing embankment material for all required project facilities; other earthwork shown on the plans and indicated in the Specifications including excavating and backfilling all structures, trenches and depressions resulting from the removal of obstructions, removing and replacing unsuitable material.

3.2 References - In connection with these Specifications, tests shall be made in accordance with these requirements:

<u>Tests</u>	<u>ASTM</u>	<u>California Test No.</u>
Relative Compaction	D-1557-70	216 or 231
Sand Equivalent		217
Resistance (R-Value)		301
Sieve Analysis		302

3.3 Bedding, Haunching, and Initial Backfill - This material shall consist of well-graded clean sand, decomposed granite, or native material with 100% passing the No. 4 sieve, and less than 5% passing a #200 sieve. The material shall be free from vegetative matter and other deleterious substances. The backfill material shall be able to be compacted readily to form a firm and stable base. The material shall have a minimum Sand Equivalent (SE) of 30 (SE30). Any trench soil or moisture condition that prevents the bedding and haunching material from forming a firm and stable base requires the use of ¾ inch crushed rock for bedding and haunching and foundation (see 3.11) as approved by the Engineer. Proposed bedding, haunching, and initial backfill materials shall be submitted to the Engineer with sieve analysis and SE test results.

3.4 Intermediate Backfill - Intermediate backfill can only be used with prior written approval from the Engineer. The intermediate backfill material shall have a minimum SE of 30 with 100% passing a 1.5-inch sieve and well graded with less than 5% passing a #200 sieve. Any request to use intermediate backfill must be submitted with a sieve analyses and SE test results for review and approval.

3.5 Sand Slurry Backfill - Sand slurry backfill shall have the following mix (by % volume): 23% sand, 73% water, and 4% entrapped air. Sand shall be as described in Section 3.3 except that the SE shall be at least 95 (SE95). Sand Slurry Backfill can only be used in a free draining trench with prior written approval from the Engineer.

3.6 2-Sack Sand Cement Slurry Backfill - Low strength concrete slurry backfill shall be a sand aggregate Portland Cement concrete and shall consist of 2 sacks (188 pounds) of Type I or Type II Portland Cement per cubic yard of concrete sand and sufficient water added to provide a fluid, workable mix that will flow and can be pumped without separation of materials while being placed. Maximum slump of 6 inches. Maximum compressive strength is 1000 psi. Minimum compressive strength is 600 psi.

3.7 4-Sack Sand Cement Slurry Backfill - 4-sack concrete slurry shall consist of four sacks (376 pounds) of Type I or Type II Portland Cement added per cubic yard of concrete sand and sufficient water to provide a slump of not more than 4 inches. Maximum compressive strength is 1800 psi. Minimum compressive strength is 1400 psi.

3.8 Embankment Construction Material - Embankment shall be constructed of excavated or imported material that is free from organic matter, roots, debris, rocks larger than 3 inches in the greatest dimension, and shall not have more than 14% of the rocks larger than 1-1/2 inches, and shall have these properties:

Maximum Plasticity Index: 15

Maximum Percent Passing the No. 200 Sieve: 50

3.9 Trench Excavation - Trench excavation shall include the removal of all materials or obstructions of any nature, except as otherwise specified, the installation and removal of all sheeting and bracing and the control of water, necessary to construct the work as shown. Unless otherwise indicated on the drawings or permitted by the Engineer, excavation shall be open cut. Trenching machines may be used except where their use will result in damage to existing facilities or where hand trenching is required to prevent damage to trees, tree roots, or other utilities.

All paving shall be saw cut or ground to a neat line. All loose, lifted, or cracked paving shall be removed to sound material and to a neat line as directed by the Engineer.

3.10 Trench Width - Minimum trench width at the top of the pipe shall be as shown in the table below. The maximum width at the top of the pipe is 8 inches greater than the minimum trench width below. If for any reason, the trench is over the maximum width, the Contractor shall provide at his own expense, stronger pipe, or corrected bedding conditions as approved by the Engineer to meet the load requirements of the changed conditions. Trenches shall meet OSHA requirements.

TRENCH WIDTH AND SIDEWALL CLEARANCE (SEE STD. DRW. SAO10)

NUMBER OF PIPES	PIPE DIAMETER "D"	MINIMUM SIDEWALL CLEARANCE "S"	MINIMUM TRENCH WIDTH "W"
1	1 AND 2-INCH	6-INCHES	12-INCHES
2 TO 3	1 AND 2-INCH	6-INCHES	18-INCHES
1	4 AND 6 INCH	6-INCHES	18-INCHES
1	8, 10, 12 INCH	6-INCHES	24-INCHES
1	14, 16, 18 INCH	6-INCHES	30-INCHES
1	20 INCH	8-INCHES	36-INCHES
1	24-INCH	8-INCHES	40-INCHES
1	30 AND UP	PER PLANS	PER PLANS

3.11 Foundation Bedding Treatment - Whenever the bottom of the trench is soft, yielding, or in the opinion of the Engineer, otherwise unsuitable as a foundation for the pipe, the unsuitable material shall be removed to a depth such that when replaced with 3/4 inch crushed rock and it shall provide a stable and satisfactory foundation as certified by the Engineer.

Three quarter inch crushed rock shall be used only with approval of the Engineer and road-controlling agency. Use of three quarter inch crushed rock must be reviewed for migration of fines and filter fabric shall be required around all three quarter inch minus crushed rock as approved by the Engineer and the road controlling agency.

Whenever the trench bottom is in rocky material, the trench shall be excavated to 6 inches below the bottom of the bells, couplings, or joints of pipe and backfilled with bedding material as specified.

3.12 Trench Bedding, Haunching, and Backfill - Pipe shall be bedded and backfilled uniformly throughout its length. The specified bedding shall be compacted to a minimum 6-inch thickness before placing the pipe. The bedding shall be compacted and leveled to give a uniform surface for laying the pipe.

Pipe shall not bear on bells, couplings, or joints. The trench shall be excavated at these locations as necessary to provide at least 6 inches of bedding material below the bell, coupling, or joint. No permanent wedging and/or blocking of pipe shall be permitted. Care shall be taken not to compact the material beneath the bells, couplings, or joints until the pipe is in its final position.

Bedding shall be the material placed between the bottom of the trench or top of the foundation and the bottom of the bells, couplings, or joints of pipe and shall be no less than 6-inches in depth. Haunching shall be the material placed from the top of the bedding to the springline of the pipe. Haunching shall be forced under the pipe and made firm and stable before any material is placed above the springline of the pipe. Backfill shall be the material placed from the top of

the haunching to the top of the trench or to the bottom of the structural road section. Backfill is composed of initial backfill and intermediate backfill.

The area 12-inches above the top of the pipe up to the bottom of the structural road section can be backfilled with intermediate backfill material provided the material can be placed and compacted to 90% without damage to the project facilities and with prior written approval of the Engineer.

Slurry backfill may be used in place of bedding, haunching, and/or backfill as shown on the plans or as approved by the Engineer. Slurry backfills shall be delivered to the job site in a transit mix truck and deposited in the trench immediately after delivery. Slurry backfills can be covered with backfill as soon as surface water is absorbed and the slurry is firm and stable. Compaction of backfill or road section materials shall not begin until slurry backfills have set and provides a firm stable base for the method of compaction used. Provisions shall be made by the contractor to prevent the pipe from floating.

3.13 Trench Compaction - The initial backfill (from the top of the haunching to 12 inches above the top of the pipe) shall be placed immediately after the pipe joints have been completed, inspected, and haunched. The initial backfill shall be carefully placed so as not to disturb and/or damage the pipe and/or joints, and shall be brought up evenly on both sides of the pipe. The initial backfill shall be manually compacted using care not to damage the pipe or joints to a relative compaction of 90%. "Manually compacted" does not exclude careful use of hand-controlled, power-operated units such as air tampers, vibrating tampers, or other hand controlled tools used so as not to damage the pipe or joints. Compaction by jetting shall not be allowed unless approved in writing by the Engineer.

When backfilling with sand slurry has reached the springline of the pipe, time shall be given for any excess water to drain. Completion of sand slurry backfill can continue or other specified backfill material shall then be placed in 8 inch maximum loose layers and compacted by some alternate method which shall ensure that backfill is compacted as required on Standard Drawing No. SAO10 and the pipe and joints are not damaged.

Compaction of backfill shall be performed in loose layers not exceeding 8 inches and shall be compacted to a density as shown on Standard Drawing No. SAO10. The backfill material shall be moisture conditioned to within 2% of optimum.

Maximum compaction layer thickness can be increased with prior written approval of the backfill material and methods by the Engineer and the road controlling agency.

The Engineer and the road controlling agency shall determine the location and depth of all compaction tests. If a test fails, the area 15 feet on either side of the test shall be re-worked and re-tested to the satisfaction of the Engineer and/or road-controlling agency until passing tests are achieved. An additional test will be performed at 50 feet on either side of the initial failing test. The entire area between adjacent failing tests shall be re-worked and re-tested until passing tests are achieved.

In trenches placed in easements, which are not in traveled private, County, City, Town, or State road rights-of-way, backfill shall be compacted to 85% with a 1/2-inch mound per foot of trench depth so that drainage to the trench shall not occur.

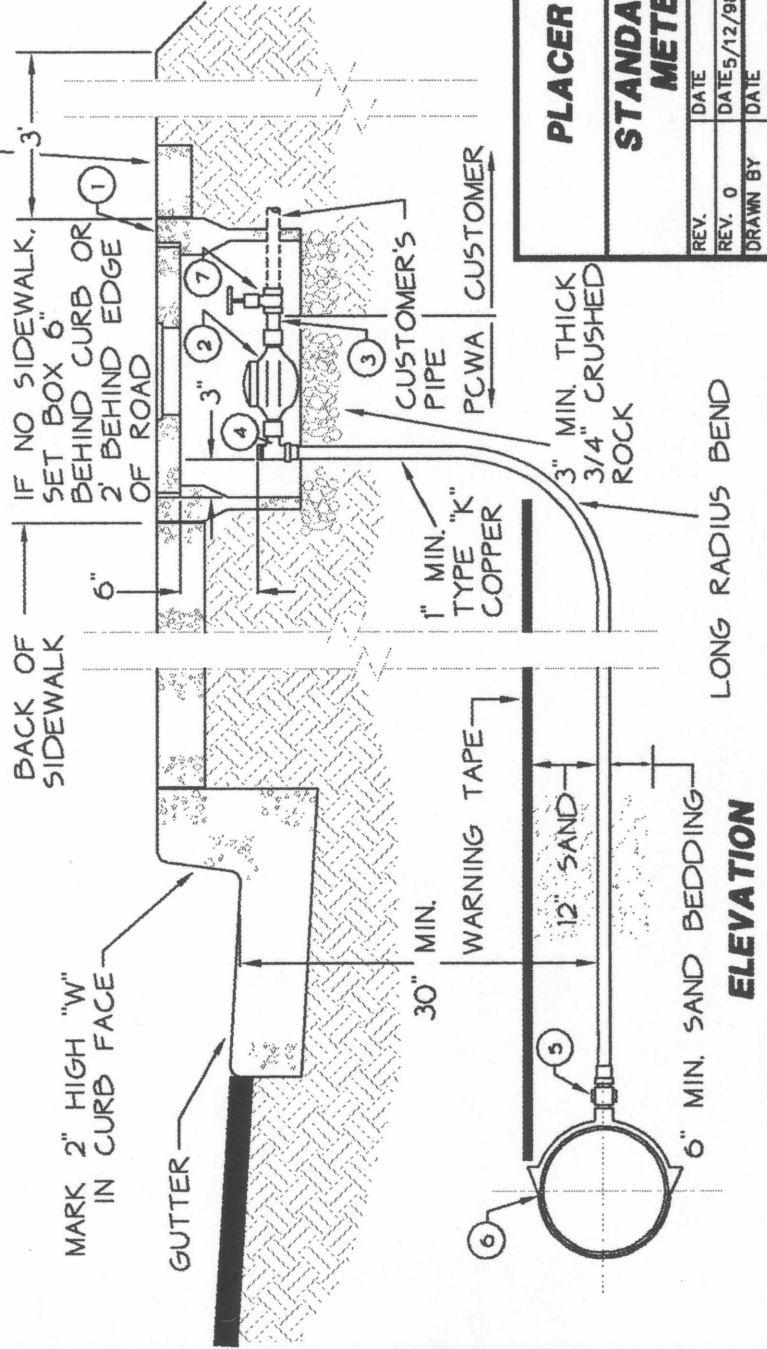
3.14 Embankment Construction - Placement and compaction of embankment material shall be in conformance with Caltrans' Standard Specifications Sections 19-6.01 and 19-6.02. The material shall be moisture conditioned to within 2% of optimum.

3.15 Structure Backfill- Backfill around structures shall be select material as described in Technical Provisions Section 3.3.

NOTE: SEE SECTION T
OF STANDARD SPECIFICATIONS.

METER BOX SHALL BE
INSTALLED LEVEL, IF IN
SLOPING AREA, (SEE SA009)
INSTALL METER BOX
WITH 12"x12"x4" THICK
CONCRETE PAD USED FOR
SOIL EROSION CONTROL PER
THE AGENCY ENGINEER.

ITEM	DESCRIPTION
①	METERBOX + COVER WITH READING PORT (TRAFFIC LID WHERE REQUIRED).
②	METER - SUPPLIED BY P.C.W.A.
③	METER TAIL
④	ANGLE METER STOP
⑤	CORPORATION STOP
⑥	SERVICE SADDLE
⑦	GATE VALVE - PCWA TO SUPPLY AND INSTALL.



PLACER COUNTY WATER AGENCY

STANDARD SERVICE CONNECTION
METERS - 1" AND SMALLER

REV.	DATE	APP.	REV.	DATE	APP.
REV. 0	DATE 5/12/98	APP. CAR	REV.	DATE	APP.
DRAWN BY	DATE	SCALE	DWG. NO.	SHT.	REV.
DCC	10/11/89	NONE	SA004		0

IF NO SIDEWALK, SET BOX 6" BEHIND CURB OR 2' BEHIND EDGE OF ROAD
 3'
 1
 6" TO 8"
 2
 5
 CUSTOMER'S VALVE + PIPE
 3/4" CRUSHED ROCK 3" MIN. THICK
 2" TYPE "K" COPPER OR BRASS
 METER BOX SHALL BE INSTALLED LEVEL, IF IN SLOPING AREA (SEE SA009), INSTALL METER BOX WITH 12"

BACK OF SIDEWALK
 MARK 2" HIGH "W" IN CURB FACE
 8" 6"
 G5 VALVE BOX + LID
 30" MIN.
 WARNING TAPE
 12" SAND
 6" MIN. SAND BEDDING
 8" SDR35 OR C900 VALVE WELL SEE SA013
 CORP. STOP OPERATING EXTENSION SEE SA014
 3
 4
 7

SEE SECTION T STANDARD SPECIFICATIONS.
 2" BYPASS RECOMMENDED FOR WATER SENSITIVE SERVICES.

CORP. STOP
OPERATING
EXTENSION—
SEE SA014

8" SDR35
OR C900
VALVE WELL
SEE SA013

6" MIN. SAND BEDDING

ELEVATION

ITEM	DESCRIPTION
1	B36 METERBOX + COVER WITH READING PORT (TRAFFIC LID WHEN REQUIRED).
2	METER SUPPLIED BY P.C.W.A. W/TEST PORT/PLUG
3	2" CORP. STOP
4	SERVICE SADDLE/1/4" BRANCH TEE
5	LOCKABLE 2" BRONZE BALL VALVE
6	GATE VALVE - AGENCY SUPPLIED + INSTALLED
7	BRASS NIPPLE

PLACER COUNTY WATER AGENCY

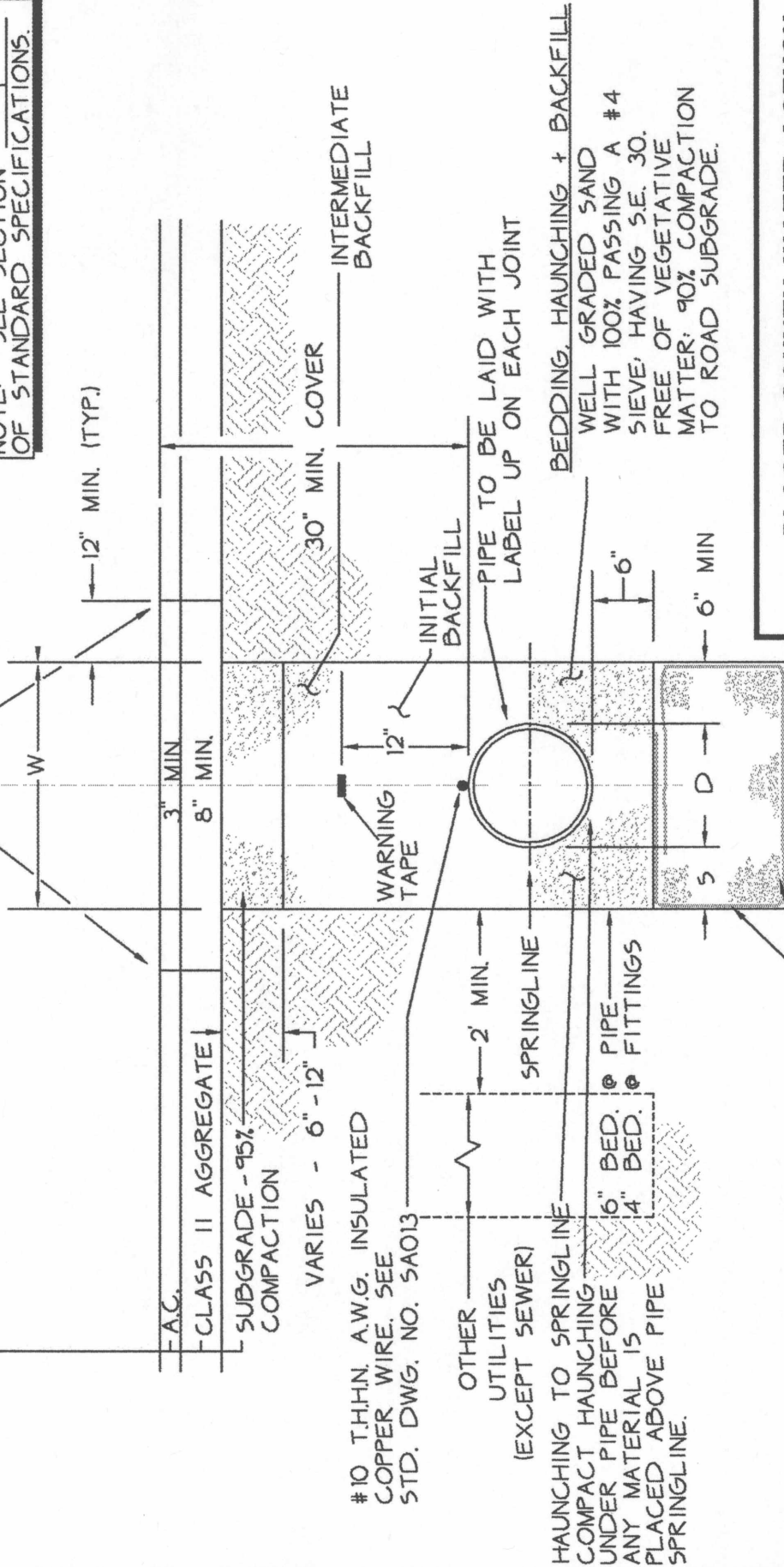
**STANDARD SERVICE CONNECTION
METERS 1-1/2" AND 2"**

REV.	DATE	APP.	REV.	DATE	APP.
REV. 0	DATE 5/12/98	APP. CAR	REV.	DATE	APP.
DRAWN BY DCC	DATE 2/1/90	SCALE NONE	DWG. NO.	SA005	
			SHT.	0	

ROAD SECTION SHALL CONFORM TO ROAD CONTROLLING ENTITY'S SPECIFICATIONS

SAW CUT EXISTING PAVEMENT PRIOR TO FINAL REPAIR OR PER ROAD CONTROLLING SPECIFICATIONS

NOTE: SEE SECTION T OF STANDARD SPECIFICATIONS.



PLACER COUNTY WATER AGENCY

PIPE TRENCH BEDDING AND BACKFILLING

REV.	DATE	APP.	REV.	DATE	APP.
REV. 0	DATE 5/12/98	APP. CAR	REV.	DATE	APP.
DRAWN BY DCC	DATE 2/1/90	SCALE NONE	DWG. NO. SA010	REV. SHY.	0

3/4" MINUS CRUSHED ROCK WRAPPED WITH FILTER FABRIC WITH 18" OVERLAP WHEN FOUNDATION IS REQ'D.

#10 THIN A.W.G. INSULATED COPPER WIRE. SEE STD. DWG. NO. SA013

OTHER UTILITIES (EXCEPT SEWER)

HAUNCHING TO SPRINGLINE
COMPACT HAUNCHING UNDER PIPE BEFORE ANY MATERIAL IS PLACED ABOVE PIPE SPRINGLINE.

6" BED.
4" BED.

PIPE
FITTINGS

SPRINGLINE

2' MIN.

WARNING TAPE

12"

INITIAL BACKFILL

PIPE TO BE LAID WITH LABEL UP ON EACH JOINT

BEDDING, HAUNCHING + BACKFILL
WELL GRADED SAND WITH 100% PASSING A #4 SIEVE, HAVING 90% FREE OF VEGETATIVE MATTER, 90% COMPACTION TO ROAD SUBGRADE.

30" MIN. COVER

INTERMEDIATE BACKFILL

VARIES - 6" - 12"

SUBGRADE - 95% COMPACTION

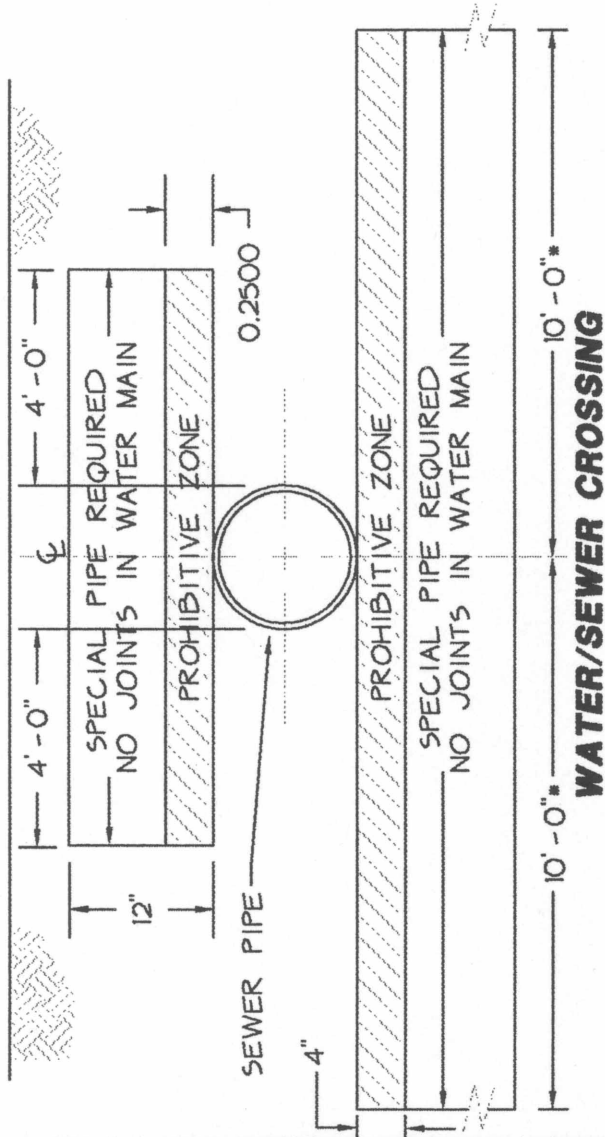
CLASS II AGGREGATE

3" MIN.

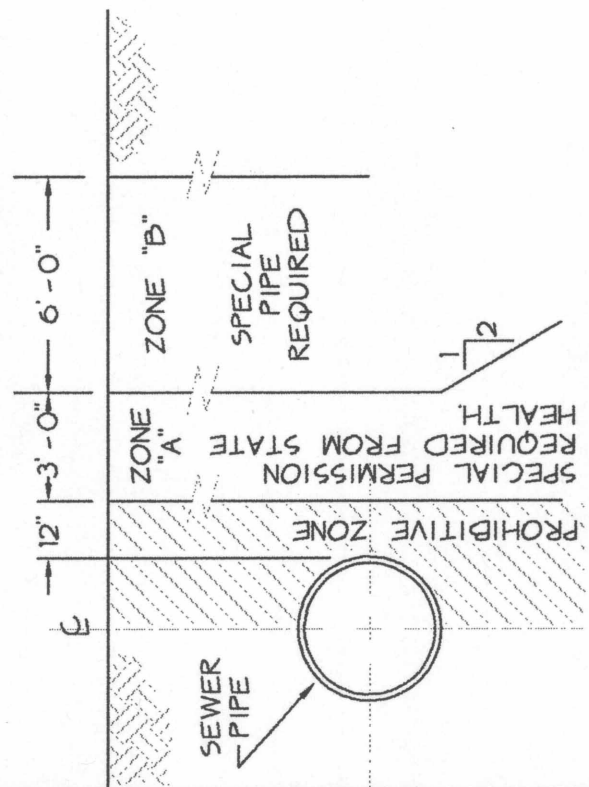
8" MIN.

12" MIN. (TYP.)

W



• 9'-0" FOR DIP (TYP.)



NOTE: SEE SECTION I OF STANDARD SPECIFICATIONS.

PLACER COUNTY WATER AGENCY									
WATER/SEWER CROSSING AND PARALLEL PIPE CONSTRUCTION									
REV.	DATE	APP.	REV.	DATE	APP.	REV.	DATE	APP.	REV.
REV. 0	DATE 5/12/98	APP. CAR	REV.	DATE	APP.	REV.	DATE	APP.	REV.
DRAWN BY	DATE	SCALE	DWG. NO.	SA011			SHT.	0	
DCC	2/1/90	NONE							

PARALLEL PIPE CONSTRUCTION



California Department of Water Resources
Attention: Ms Marsha Prillwitz
Office of Water Use Efficiency
P.O. Box 942836
Sacramento, CA 94236

February 28, 2002

Dear Ms. Prillwitz:

I am writing in support of the Placer County Water Agency's (PCWA) grant proposals to the Department of Water Resources under the 2002 Proposition 13 grant solicitation.

The Regional Water Authority is a joint powers authority of 17 water suppliers serving more than 1.2 million people in the greater Sacramento Region. Our mission is to serve and represent regional water supply interests and assist RWA members with protecting and enhancing the reliability, availability, affordability and quality of water resources. RWA is currently implementing a Regional Water Efficiency Program designed to expand measures to help area water providers fulfill Water Forum and California Urban Water Conservation Council best management practices (BMPs).

PCWA is an active member of the Regional Water Authority and the RWA Regional Water Efficiency Program. We strongly support the PCWA applications entitled "Auburn Leak Repair Project," "Auburn Water Supply Audit, Leak Detection and Repair," and "Canal and Reservoir Efficiency Feasibility Study."

The PCWA proposals further the ability of PCWA to meet their Water Forum Agreement commitments, and are fully compatible with the CALFED water quality, water supply, and environmental restoration objectives.

The Regional Water Authority recommends that the Department of Water Resources fund PCWA's proposals.

Sincerely,

A handwritten signature in blue ink, appearing to read 'E. Winkler', is written over a horizontal line.

Edward Winkler
Executive Director

cc: Dave Breninger